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2021
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Is Ethiopia A Developmental State? An Enquiry into the Emergence of Domestic Capital in Complex Industrial Sectors

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Thesis Submitted for the degree of Doctor of Philosophy in Applied Development Economics

University of the Witwatersrand, School of Economics and Finance

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August 2021

Abstract

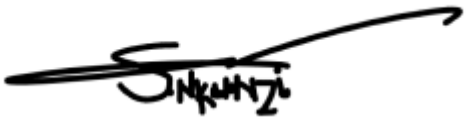
The slow process of structural transformation and lack of industrialization on the African continent clearly highlights the need for industrial policy. The Ethiopian state quickly realized this and implemented industrial policy to support and promote a number of light manufacturing sectors. A preparation for the emergence of more advanced industrial activities through the state-owned and military-run Metals and Engineering Corporation has been subsequently underway. This focus on advanced industries is fundamental, not only because they consist of a challenging and complex set of manufacturing activities, but because an African country's ability to develop in this direction could be a litmus test for whether or not we have a developmental state on the continent. However, like many other African countries, Ethiopia does not have a significant productive capitalist class to begin with. If the emergence happens, the East Asian developmental state experience informs us that it has to be driven mainly through import substitution and a domestic industrialist class that is able to push the government to defend its interests. On the other hand, the key to the success of Industrial policy lies in the effective design and implementation reciprocal control mechanisms (RCMs) by the state.

Through a political economy lens, the study draws on the case of Ethiopia's state-owned and military-run Metals and Engineering Corporation (METEC) and its role as a conduit for technology transfer and vehicle for driving the development of a domestic industrialist base in Ethiopia. First, the metals and engineering sector and METEC were located within the broader Ethiopian industrial policy context as well as the development praxis around Ethiopia mega-projects. The study found the Ethiopian state to be an exemplary case of the 21st century in its intention to bridge the continental-wide gap in African indigenous productive capitalists by using state and military capital to form strategic links with foreign and domestic companies for technology transfer and capability building. Second, I explored the extent to which learning-by-doing has been taking place through the METEC structure and its outcomes. The evidence shows that domestic capital has been stimulated and technological capabilities are being acquired across a number of areas in the metals and engineering sector. At the same time, however, a plethora of challenges associated with learning-by-doing and learning from failure at policy, sectoral and firm levels were revealed. Third, I explored the governance of industrial policy by looking at state-business relations across the state, METEC and the private sector. The analysis of state-business relationships shows the complexities associated with the effective design, management and enforcement of RCMs in a context where learning needed to be nudged much more proactively. However, even the failures should be seen as part and parcel of the processes of learning during a 'teething' stage and not taken as a confirmation of the pessimism associated with low-income countries turning to complex manufacturing structures.

Ultimately, Ethiopia has been edging closer to a developmental state. Unlike others, the state has claimed the right to learn and fail. The ambitiousness of Ethiopian industrial policy needs to be matched by an equally stronger and serious dimension of policy instruments and disciplinary mechanisms that would ensure better design of policy and high levels of effort in learning.

Declaration

I declare that this thesis is my own unaided work. It is submitted for the degree of Doctor of Philosophy in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination in any other university.



Sibulele Nkunzi

Candidate's Signature:

Date: 31 August 2021

Dedication

This thesis is dedicated to all Ethiopians, in the homeland and in the diaspora.

Acknowledgements

I would like to thank my Supervisor Professor Nicolas Pons-Vignon for his guidance throughout this PhD. I cannot even begin to find the words to express my gratitude to you for taking me under your wings, believing in me when I sometimes doubted myself and helping me stand on my own feet. This thesis would not have been possible without your generous support, empathetic feedback and patience. Thank you for walking this intellectual journey with me.

To my Family: ooNozulu, Mchumane, Mpangazitha, Luvuno owavuna uNtsele no Bhungane. Khesa liyasa liyasibekela, noMthathambo kwelizphezulu. AbeNguni abahle abeza beMacocobela njego kwindla, bewela umfula uThukela.

Of the Nozulu clan, Jordan (1973) in *Towards and African Literature: The Emergence of Literary Form in Xhosa* correctly observes:

> The Nozulu clan, whose daughters are famous for their beauty: The beautiful Nguni of the Mother-of-the-heavens, who came fresh and beautiful as the cornfields in autumn, smooth and bright as the round stones of the river. In this last one, the Hlubi pay compliments to the mother of the famous Mpangazitha. She belonged to this clan. The legend is that her people came as refugees to the Hlubi. In order to enter Hlubi territory, they had to cross a big river [uThukela river]. To make sure that they should be welcome, the parents decided to dress all the beautiful girls as attractively as possible and let them go ahead of the rest of the group. The girls crossed the river and took a path through the cornfields. It was autumn. When the Hlubi saw these young women emerge from the fields, their admiration knew no bounds. "As beautiful as the cornfields themselves!" exclaimed one. "As smooth as the stones of the river they have just crossed!" observed another. When the rest of the fugitives saw how kindly the girls were received, they decided to follow. On reaching the royal place, they were told, "If you are related to such

beautiful young women, you cannot be bad people. We welcome you!" Mpangazitha's mother was a descendant of the leader of this fugitive clan.

To my Mother: Nokulunga 'MaJuqu' Nkunzi. Where would I be without your love, prayers and support? Uliqhawe.

To my Mother's Sister: Noluthando Jali, ndiyabulela ngokundikhulisa.

To my Siblings: Boy, Nomava, Thembisa, Lwando, Nosikhungo, Mzukisi. Thank you for all the support you've given me. Ndiswele imilomo eliwaka.

This thesis would also not have been possible without the help of many family, friends, colleagues, research participants, and strangers. There are too many of you to recount and mention here.

Financial Assistance:

I would also like to thank the financial support I received from National Institute for the Humanities and Social Sciences (NIHSS).

Opinions expressed and conclusions arrived at, are those of the author and not to be attributed to the NIHSS/SAHUDA.

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Chapter 1

Introduction

1.1 Introduction

Could Ethiopia be the developmental state we have been waiting for on the African continent? This is a question that has been posed and probed many times and from different directions in the literature (Lefort, 2012; Melke, 2013; Clapham, 2015; Cramer and Chang, 2015; Desta, 2019; Shimye, 2017; Woldegebrael, 2018; Hauge and Chang, 2019; Lavers, 2019). The question also finds its location in the broader debates about the possibility of African developmental states (Mkandawire, 2010; Nyamnjoh and Jimu, 2005; Routley, 2014; Mabasa and Mqolomba, 2016). It was not too long ago that Botswana, Mauritius and South Africa were touted as having attainted the status of prime examples of African developmental states (Edigheji, 2005; Taylor, 2005; Meisenhelder, 1997). However, recent work (Hillbom, 2019; Gumede, 2019) raises doubts and even rejects the characterisation of Botswana and South Africa as developmental states due to weaknesses in industrialization efforts, a lack of dynamic cooperation between the state and private-sector entrepreneurial groups, state capacity and policy confusions, amongst many other factors. This thesis, by investigating the question of the Ethiopian developmental state through the prism of the emergence of an indigenous capitalist class in complex manufacturing activities, therefore, comes at a time when the search for another African developmental state could not be any more important and necessary.

What makes the question particularly interesting is the peculiarity of Ethiopia of it never having been colonized (except for a 5 year Italian occupation in the 1930s) and its long history of imperial state building that dates back to the early 1900s (Markakis, 2011). The country has enjoyed a deep and lengthy process of state formation since Haile Selassie's establishment of a central administrative bureaucracy in the 1950s for the implementation of development plans targeted at the transformation of the Ethiopian agricultural sector (Padayachee, 2020). In addition, Ethiopia stands out as an example of a low-income African country that is doing development differently and on its own terms by virtue of possessing autonomy and

independence in decision-making and governance (Fourie, 2011; Oqubay, 2015). At the same time, the country appears to be strongly emulating the developmental state pattern of East Asian newly industrializing countries and modalities of industrial policy such as can be found in South Korea and China. Ethiopia is one of the few African countries that formulated and implemented a fully-fledged industrial policy since the early 2000s when it was less fashionable to do so (Oqubay, 2015). Without relying on a resource boom in primary commodities or oil, Ethiopia managed to sustain double-digit economic growth averaging 11% between 2003 and 2014. The average growth rates in this period for agriculture, industry, and service sectors stood at 9%, 13.8 %, and 12.2%, respectively. An activist industrial policy, combined with a long-term national development vision, highly committed political leadership, and strong institutions are said to be the differentiating factor for Ethiopia in Sub-Saharan Africa and have all conspired to shift Ethiopia from a relatively agrarian to an industrial society (Oqubay, 2015).

This study is motivated by the emergence of industrial activity in Ethiopia as illustrated in the work of Oquabay (2015): *Made in Africa: Industrial Policy in Ethiopia*. There is no doubt that Oqubay (2015) recognises the significant relevance of developing advanced manufacturing sectors during the early stage of economic development that Ethiopia currently finds itself. However, even in his work the focus is still primarily on learning-by-doing and the nature and characteristics of state-business relations within the well-known light manufacturing sectors such as leather and leather products and horticulture or the relatively 'easy' import-substitution sector (ISI), cement production. The dearth of literature examining learning at firm-level and at the level of policymaking within the state in relation to advanced sectors in Ethiopia would seem to suggest that the development path, industrial policy choices, implementation processes and outcomes of the present Ethiopian experience represent a case of EPZ-driven development by way of attracting foreign investment in assembly activities in light manufacturing.

This type of approach is akin to the industrialization path taken by East Asian countries such as the Philippines or Malaysia where industrial development did not manage to go beyond the attraction of foreign investment through rolling flexible labour laws, concessions on land or well-organized infrastructure; a strategy that can arguably deemed as a race to the bottom (Jauch,

2002; Stein, 2012).[1] The industrialization strategy of South East Asian states, therefore, generally failed to build domestic industrial capabilities in advanced sectors (Chibber, 2003). On the other hand are North East Asian developmental states like South Korea or Taiwan, which took the higher road and managed to use the proceeds from their investment in 'easy' sectors to build up longer-term capacities for more complex production in more ambitious projects such as steelmaking, shipbuilding and a host of other medium to high-technology manufacturing activities (Amsden, 1989, 2001; Chibber, 1999, 2003).

The emergence and sustained success of advanced industries in the East Asian developmental states could not be left to either the forces of the market or foreign domestic capital, but had to occur through a domestic capitalist class which was nudged by the state to invest and engage in continuous learning-by-doing (Wade, 1990; Amsden, 2001; Khan, 2009; Khan and Blackenburg, 2009). Today, the most complex of export sectors of the East Asian developmental states were initiated through import-substitution that was driven by domestic capital. A focus on advanced industries is fundamental, not only because they consist of a challenging and complex set of manufacturing activities, but because an African country's ability to develop in this direction could be a litmus test for whether or not we have a developmental state on the continent.[2] However, like many other African countries, Ethiopia does not yet have a huge productive capitalist class to begin with.

Even a closer look at the track record of African post-colonial states, especially in Southern Africa, in promoting indigenous manufacturing classes has largely been one of failure relative to the success stories of East Asia. The African challenge still remains one of a non-sufficient range of pre-existing capitalist firms that manufacture capital equipment (UNCTAD, 2013). Arguably, however, the light manufacturing focus in Ethiopia at the moment is arguably preparing for an upskilling and 'leapfrogging' so that over time the emergence of advanced manufacturing will

[1] It is important, however, to note the work of Staritz and Whitfield (2019) which focuses on the extent to which EPZ-type light manufacturing development in Ethiopia's apparel industry has generated spillovers to promote locally owned export firms or that of Brautigam and Tang (2014) in relation to Chinese firms and their African counterparts.

[2] This study does not, by implication, assume that a developmental state cannot be conceived in the context of servitisation (industrialising through services) or resource-based activities since "some African countries have experienced some degree of structural transformation following different paths and at different speeds. Some countries transformed through low-wage manufacturing while others transformed through services or the agricultural sector" (AfDB, 2014a:16)

replace the initial focus on light manufacturing activities. First, if this upskilling happens, Amdsen (2001) argues that it will first have to be driven by domestic capital and not foreign capital as was the case in East Asia with even the most complex of export sectors that started through learning by doing in import-substitution manufacturing. Second, Amsden (2001) argues for interventionist industrial policies in the mediation of the process of learning through the enforcement of a set of compulsion and disciplining mechanisms, which she has termed reciprocal control mechanisms, on learning firms.

The literature (Amsden, 2001, 2008; Amsden and Hikino, 1994; Andreoni, 2014; Bell and Albu, 1999; Dalum, Johnson and Lundvall, 2010; Dosi and Nelson, 2010; Fagerberg, Srholec and Verspagen, 2010; ; Fu, Pietrobelli, and Soete, 2011; Hirschman, 1958, 1989; Khan, 2009, 2013, 2016; Lall, 1992, 2002; Lall and Pietrobelli, 2005; Lee, 2019; Nelson and Winter, 1982; Oyelaran-Oyeyinka & Sampath, 2010; Pietrobelli and Rabellotti, 2011) proposes a number of measures of learning, which are then mobilized in the toolbox of this study as part of the range of tools that are important in the assessment of the quality of learning as well as in the formulation of a complex understanding of the conditions under which learning is happening and the extent to which the Ethiopian developmental state might be consolidating. The learning-by-doing metrics include measures such as: the formation of dynamic inter-industry linkages; enforcement of the principle of reciprocity and adaptability in the state's implementation of industrial policy; guidance in the selection of technology by the state; development of domestic project execution capacity; development of technological infrastructure; training and skills formation (including expertise and knowledge); promoting in-firm technological capabilities; building institutional networks; innovate research; instituting and enforcing local content requirements; partaking in joint-ventures; prohibition of turnkey projects; giving preference to reverse engineering (learning by copying, emulation); co-production; foreign licensing; giving preference to local consulting firms to supervise projects; creation of institutions and policies that promote technological capabilities; and knowledge acquired and experienced gained. This 'domestic technology capability approach', and its concomitant focus on learning, is at the centre of this thesis' analysis in understanding success and failure.

The problem, however, is that any desire to couple learning with the promotion of an indigenous capitalist class that would, in future, be able to take on complex domestic mega-projects with a

greater degree of independence is potentially encumbered by a number of political economy challenges. First, the Ethiopian domestic private sector has repeatedly expressed its dissatisfaction with the government concerning the latter's preference for certain groups of capitalists over others. This somewhat reveals the heightened tensions in the country around expectations of rent creation and appropriation (Lavers, 2019; Vaughan and Gebremichael, 2011; Wies, 2016; Weldegiorgis, Mesfin and Sturman, 2017). It appears that the increased economic growth in Ethiopia is putting pressure on the state to allocate and distribute both distributional rents and industrial policy rents, which may not necessarily be compatible with each other, so that the economic and political expectations of domestic industrial capital and society are met. The creation of a domestic capitalist class which would have the legitimacy of being a crucial partner to Ethiopian development is important. However, an industrialist class that is not perceived by some factions of society at large, as the supposed beneficiaries of industrial policy rents, puts into question the likelihood of Ethiopian industrial development to proceed any further.

On the other hand, as foreign capital becomes a strong development partner for furthering industrial development, there have been bouts of unrest and turbulence in Ethiopian politics. These have often taken the form of riots mainly targeted at foreign investors' property, which have been precipitated by perceptions that the government is providing substantial support to foreign investments, to the neglect of local people (Solomon, 2016). The apparent invasion of agricultural land by foreign investment, which has seemingly been facilitated by the government, has received backlash from local farmer peasants (Lavers, 2012). Reports are that the unrest, which often sees the burning down of several factories and flower farms, largely has to do with the concessions being made to foreign FDI to set up factories and also produce cash crops such as flowers for export and thus peasants are being squeezed out of the land to accommodate FDI that gets access to land "cheaply" but "without producing promised jobs to locals" (Solomon, 2016). There seems to be a paradox of victory, in that what we would seem to be success story of Ethiopia's first stage industrial policy is being met with resistance from certain classes and interest groups of the Ethiopian society. It appears that industrial policy is increasingly being negotiated in a tumultuous environment and contested space of political and social instability. There is, therefore, a strong indication that if Ethiopia to successfully move into a second or third stage of industrial policy and industrialisation, the government not only has to push for structural

transformation, but must address the contradictions of capital ownership and provide clarity on the role of domestic capital in Ethiopia's industrialisation project.

What seems puzzling however, is how, over the last decade, the government took the decision to embark on large-scale manufacturing investment in sugar plantations and factories, fertilizer production, metals and engineering sectors mainly via a state-owned enterprise that was created in 2010, the Metals and Engineering Corporation (METEC). As has often been the case on many parts of the African continent, when the state is heavily involved in the economy, the role of the state and its impact in Ethiopia has, in the media and literature, been subject to speculation based on limited empirical evidence. The commentaries have tended to be driven by mainstream economic assumptions. This study, therefore, aims to fill the lacuna and explore the role of the state in its promotion of the emergence of broader indigenous capital in a topical subject that remains impressionistic. The ascendance of the new regime in 2018, with its more market-centric stance, raises challenges to the developmental state policy that petrified state-led industrialization into the Ethiopian state and was instituted during Meles Zenawi's time as Prime Minister of Ethiopia (1995-2012). Some of Ethiopia's most important state-owned enterprises (SOEs) now appear to be high on the list of the privatization agenda. Seemingly pessimist attitudes and narratives about Ethiopia's state-led industrialization are now on the rise and invoke the idea the alleged inefficiencies of state production and transformation in SSA in the 1960s and 1970s. An examination is needed into the extent to which state-led industrialization through METEC has actually served as catalyst for the kind of learning, accumulation of manufacturing experience and propulsion of structural change that is required to move Ethiopia into the next stage of industrialization and development.

1.2 Research Questions

Owing to the dearth of research on the subject and given the gaps in the literature, the principal question that this study interrogates is:

- To what extent does the emergence of a domestic industrialist class, through advanced industrial activities suggest that Ethiopia is developing in the direction of a developmental state?

In order to understand the prospects for this, the following interrelated sub-empirical questions:

1) Is there evidence of learning in advanced industrial activities? Through which channels is this learning happening, and how much of it is being accompanied by the development of a local capitalist class where previously it didn't exist?
2) To what extent have RCM been deployed to manage rents so as to permit and sustain the accumulation of experience and learning in these industrial activities?
3) Do the state-capital relations between domestic capitalists and the state/ruling elites constitute a growth-enhancing relationship, which taken together with learning-by-doing, show any prospects for a shift towards independence in taking on domestic projects, presently and in the long-term?
4) Do the increasing societal pressures for redistributive rents frustrate, distort or derail the Ethiopian government's efforts towards building domestic industrial capabilities in advanced industrial activities?

1.3 Contributions

This thesis makes three original and interrelated contributions that advance the empirical, theoretical and methodological debates at the intersection of capitalist accumulation and transformation and industrial development in SSA. There exist a number of evidence gaps in this topic and this thesis contributes to closing these gaps. Behuria (2021), in her own study of diversified business groups (DBG) on the African continent, has argued that not only has the study of African capital and capitalist transformation remained dormant or marginal in academic analysis and policy discussions, but that the prevailing assumptions are that African capital is either non-existent or too weak to influence the industrial policies of African governments. At the empirical level and in specific relation to Ethiopia, the question of the developmental state has, in one way or another, focused on how developmentalism has manifested itself in, for instance, agricultural or energy projects (Clapham, 2015; Shumuye, 2017; Woldegebrael, 2018). Schäfer (2017) has examined capital accumulation by large-scale domestic producers in the coffee and cut flower sectors and their relationship with the Ethiopian developmental. The question of the developmental state has not, however, been applied anywhere else in the way I have attempted to frame it here, namely in relation to the emergence of indigenous capital and the processes of learning by doing in advanced industries such as metals and engineering. Other research (wa Gĩthĩnji and Adesida, 2011) that has attempted to connect the developmental state

to the issue of technological sophistication has been more general to African economies as a whole and not made the link in relation to particular sectoral activities, countries or even in explicit relation to the notion of learning-by-doing. An incorporation of learning-by-doing into the analysis has the potential to dispel the pessimism associated with the impossibility of a developmental state on the African continent.

Given the extraordinary significance of state-owned enterprises in Ethiopia (SOEs), especially in the manufacturing and industrial sector, it is remarkable how little careful empirical work has been done to understand forms of learning that are being driven from within and through state capital ownership in the Ethiopian post-socialist era. As a result, little systematic evidence exists on learning dynamics and the institutional and political factors that make it possible. Through an in-depth case-study of METEC, this thesis develops a more detailed understanding of the efforts to pursue a change in the structure of production towards more complex, sophisticated and higher productivity activities. The case study is particularly apt because it bears strongly on the question of how this can be initiated through the stimulation of domestic capitalists as well as the industrial policy challenges that the aspirant developmental state is confronted with in doing so.

At the theoretical level, the existing literature (Abebe, 2018; Gebregziabher, 2019) has, so far, attempted to make sense of the incredibly complex, fluid and contested phenomenon of METEC mainly through the framework of neopatrimonialism or its variants. As a result, the academic debate remains dominated by views that have sought to explain the outcomes through the lens of corruption, rent-seeking (in pejorative terms) and lack of good governance. I, on the other hand, approach the subject differently by using the conceptual framework that revolves around learning-by-doing (Amsden, 1989, 1997). I argue that the state's effort to build a capitalist class in a least-developed country with a complex history, the inevitable selection of particular groups to which learning rents are to be directed during the capitalist transition is bound to happen through a dense network of political connections. The distribution of rents has much to do with how the state and political power are constructed, and rent seeking is a necessary part of the allocation of resources (Khan and Jomo, 2000). Importantly, industrialization and development involves the deployment of various economic and political linkages and the distribution of rents for learning. In the theoretical framework, rent-seeking is understood largely to be a function of how the state distributes the rents and relates through mechanisms of reciprocity to the recipients

of those rents and how the supported operations are carried out. Whether or not corruption occurs during this process is far too shallow a concern to dwell upon, if our aim is to go beyond the logic of political clientelism and neopatrimonialism as the basis of the African state (Gray and Whitfield, 2015; Mkandawire, 2015; Pitcher, Moran and Johnston, 2009).

The conceptual framework helps acts as compass that allows for a more important distinction to be made between growth-enhancing and growth-reducing forms of rent-seeking. Blanket critiques of corruption may be too simplistic and may often equate the existence of corruption with an altogether negation of the procession of learning. The possibility of growth-reducing rent-seeking does not mean that any form of rent formation is a sign of no progression in development; some capacity might still be built even in the presence of corruption. However, a far more important question than whether rent seeking or corruption is present is whether the distribution of rents is translated into learning and catch-up. Ultimately, the industrial policy dynamics to which the emergence of domestic capitalists is tied to must be able to encourage gradual improvements in technology capability-building, linkages, upgrading, and productivity and at some point see to it that rents are generated directly from the production system, in spite of the prevalence of corruption (Khan, 2000; 2009; 2013).

Some key measures of learning were proposed (see chapter 2 and 3), which then became the lens through which an assessment into the quality of the Ethiopian developmental state made. These include: technological capability building in domestic firms, formation of dynamic inter-industry linkages, enforcement of the principle of reciprocity and adaptability in the state's implementation of industrial policy (Amsden, 2001, 2008; Andreoni, 2014; Hirschman, 1958, 1989; Khan, 2009, 2013; Lall, 1992, 2002; Nelson and Winter, 1982). The first empirical dimension assesses the intention and effectiveness thereof of the state to build technological capabilities as both a producer and an incubator of private sector learning through its key SOE, the Metals and Engineering Corporation (METEC). The second empirical dimension entails a reflection on the processes of building growth-enhancing governance capacities within the state. The case study goes on to tease out some lessons that criss-cross these two dimensions by uncovering the challenges and limitations associated with both firm-level and policy learning. The evidence underscores how relationships between the state and the private sector or intra-relations between the state and SOEs may or may not generate technological capability building

and lead to a process of learning and rapidly increasing development in terms of industrial accumulation and linkages.

1.4 Structure of the Thesis

This thesis is divided into seven chapters. This introductory chapter provides the background context of the research, outlines the research question as well as the ancillary question. This is followed by a highlight of the conceptual, methodological and empirical contributions of the study which are focused the extent to which domestic firms and the state are learning.

Chapter two sets out an overview of the main theories that can help us understand the outcomes of Ethiopian industrial policy in its advanced industrial sector. It constitutes of the presentation of the conceptual and theoretical framework on the role of industrial policy in the promotion of learning and emergence of a domestic capitalist class. The framework uultimately argues that developing countries need to prioritize four things: 1) put the developmental state at the service of the current needs to catch-up and industrialise; 2) connect this to various forms of capitalist emergence; 3) design and implement a rents managemhent framework to catch up; and 4) combine the rents management framework with challenges around learning. The conceptual framework begins broadly with definitions of industrial policy and then proceeds to take a critical look at mainstream conceptions of development and industrial policy. The chapter dwells on structuralist approaches to industrial policy and expounds on them in relation to developing country contexts. Linkage-related issues are discussed with a focus on the deliberate role of the state in the emergence of linkages and specific measures of learning for increasing returns activities, particularly in developing countries, are proposed. The chapter then looks closely into reciprocal control mechanisms and the extent to which they be used to frame the relationship between the state and capitalist classes to make learning possible. The chapter follows to look at the question of capitalist development on the African continent and the political economy factors that have shaped the direction of capitalist development in a number of African countries in the post-independence period as well as the unresolved contradictions that remain in the 21st century. Towards the end of the chapter the role of SOEs and military businesses in economic development is engaged with.

Chapter three provides a detailed description and explanation of the methods employed in the carrying out of this research. The choice of the case study is justified and the data collection methods are described. The challenges faced during the research period in specific relation to access to data and sources, data availability, and positionality are also discussed. The chapter also discusses the inductive research approach and its usefulness with the case-study.

Chapter four constitutes the first step of examining the historical dynamics of Ethiopian industrial policy and how the metals and engineering sector fits within the industrial policy before going into empirical evidence.

Chapter five is an assessment of firm-specific technological capabilities that have been built within METEC and the domestic private sector since METEC's establishment. METEC's technological learning model is uncovered and the various linkages in it are explored. First, the links between METEC and international firms that supply technology, inputs or act as contractors in various mega-projects are examined. The focus is on the extent to which METEC has become better at technology selection and more independent at project execution as a result of linkages with foreign companies is probed. The chapter then looks how the METEC's expansion and diversification strategy and the current state of technological deepening in various sub-sectors reflect the corporation's technological achievements. Second, the chapter looks into METEC's links with domestic companies via sub-contracting opportunities and the forms of learning, upgrading and competencies that have emerged from the domestic private sector's involvement in mega-projects as suppliers and engineering service providers. Lastly, METEC's role as incubator of businesses is examined and the extent to which it has been successful.

Chapter six documents the key political economy aspects of the evolving relationship and interests between METEC and state. The discussion focuses on METEC's level of autonomy from the state's broader industrial policy governance and the implication this has had for the development of an RCM-based relationship or lack thereof. The outcomes in learning can be explained by the extent to which the state has been able to enforce the reciprocity principle. The relationship between METEC and the private sector is also probed and the limitations and challenges that have constrained the emergence of a more dynamic and transformative relationship are explained. The outcomes are juxtaposed against evidence from the steel sub-

sector, which shows signs of a productive relationship emerging between the state and steel producers.

Chapter seven makes sense of the question of the Ethiopian developmental state by analyzing the findings and combining this with an interpretation of the outcomes. By piecing together both obvious and hidden elements of METEC, I uncover both evidences of success and failure. The outcomes are interpreted in light of the technical as well as political economy challenges associated with learning. A major part of the chapter constitutes a reflection of how my findings allow me to debunk or agree with the dominant narrative in the existing literature. More specifically, I situate myself in the discussion of the existing literature and interrogate the validity of its claims in relation to the way in which the outcomes have been interpreted. The analysis, thereby, engages with what I see as simplistic conclusions that are drawn on the predictability and inevitability of failure of state involvement. The lopsidedness of the existing literature in its assessment of METEC is exposed and interpreted as arising from a failure of not being able to adequately capture the complexity of Ethiopian industrial policy and attempts at promoting more complex sectors and a domestic capitalist class.

By way of a conclusion, chapter eight provides a summary of the key findings of the study. The list of references and appendix follow this chapter.

Chapter 2

Literature Review/Conceptual Framework

2.1 Introduction

The developmental state paradigm is most closely associated with the East Asian newly industrializing countries (NICs). The literature of the developmental state can be traced back to the studies on the so-called East Asian miracle with the rapid economic growth and structural transformation that took place in the second half of the 20th Century. The 'capitalist developmental state' is a term coined by Johnson (1982) in his seminal study on Japan's great industrialization leap. The developmental state, according to insights from the Japanese experience, is characterized by a strong government apparatus, a coherent relationship between the government and the political elite, well-functioning and coordinated institutions, and the effective implementation of industrial policy (Johnson, 1982). Japan's Ministry of Trade and Industry (MITI) is a classic success case of a strong state-led approach to development that was marked by the power, autonomy and independence of this ministry to formulate and create policy without being hobbled by capitalist forces.

Subsequent contributions to developmental state debates have been made by different scholars such as Amsden (1989; 2001), Wade (1990; 2010); Evans (1995); Leftwich (1995); Woo-Cummings (1999); Mkandawire (2001); Reinert (2009); etc. Chang (2010) points to the existence and possibility of different varieties of the developmental state. Essentially, he illustrates how 'developmentalism', a common denominator of all developmental states, took different forms and shapes in countries such East Asian states such as South Korea and Japan, France, Scandinavian states and the United States, among many others, and depended on the existing political and economic conditions of the time. According to Chang (2010:82) the narrow definition of a developmental state "is one that derives political legitimacy from its record in economic development, which it tries to achieve mainly by means of selective industrial policy". Following suite from Chang, we acknowledge the narrow definition and move to adopt the much broader definition, which drops the political condition (deriving legitimacy from economic development) and broadens the definition of the developmental state to encompass a state that

intervenes to promote economic development through the pursuit of market-defying selective industrial policies. Developmental states are, thus, marked by their departure from neoliberalism (Fine, 2013).

Mkandawire (2010) and Chang (1999) also identify developmental states as those states that have a collective aspiration and deliberate intent to develop; take a long-term view on the attainment of structural change, rapid economic transformation and growth, catching-up; having the ability to manage the inevitable class conflicts that come with alterations in conditions of accumulation; and agility in terms of institutional adaptation and innovation. The important question for now-developing countries on the African continent then is how to emulate developmental states in order to industrialize and catch-up in the current epoch of globalization.

The developmental state remains important and relevant in informing our understanding of the appropriate responses to development questions even in the 21st Century (Mkandawire, 2001; 2010). This thesis, therefore, attempts to make a link between various forms of capitalist emergence and industrialization on the Africa continent with the question of the possibility of an African developmental state. Accordingly, the 'infant capitalist' argument is argued to be of special significance for Africa, where the creation and strengthening of an indigenous capitalist class is imperative to industrialization in an environment where conventionally the formal private sector is sparse, heavily dominated by ethnic minorities or by foreign investors (Norman and Stiglitz, 2012). Only powerful and capable local interests, public as well as private, possess a degree of permanent, all-profound commitment to national needs sufficient to generate the momentum required for a successful onslaught against the condition of dependent, distorted and restricted development (Kennedy, 1988).

The main theoretical insight from the developmental state paradigm that is, therefore, under examination in this thesis is the problem of catch-up in the industrial sector of African countries and how the implementation of a rents management framework (otherwise known a reciprocal control mechanisms) can overcome the problems associated with learning (Amsden, 2001; Khan, 2000, 2010). This theoretical insight is combined together with mainly Hirschman's (1967) conceptualisation of the challenges associated with learning in development projects in developing country contexts. This then allows us to assess the quality of a developmental state based mainly on two dimensions that are linked to each other, although not exclusive. The first

one is informed by the understanding that a successful industrial policy is defined by the extent to which it alters conditions of accumulation and the extent to which it enables new forms of accumulation via linkages processes to occur (Lee, 2013). The second is based on the ability to generate learning within the country's advanced industrial sector as well as learning from a policy perspective. These two are linked, since an inquiry into the emergence of new forms of productive accumulation and their interests would never be complete without understanding the complex learning process that often comes with the ability to allocate economic rents through a set of reciprocal control mechanisms, and build its capacity to enforce the instruments that govern the functioning of policy.

In its totality, the conceptual framework will be useful to make sense of the Metals and Engineering Corporation as a conduit of learning and an incubator of domestic capital in Ethiopia. More precisely, the chapter centrally employs a mix of elements of industrial policy, learning-by-doing, state-business relations and African capitalist development through the prism of reciprocal control mechanisms (RCMs). A common feature among the aforementioned scholars in their focus on the developmental state is that they are well-grounded in a rich inductive and structuralist tradition of development in developing country contexts and in the theory of late industrialization. In addition to this, the question of learning, at both firm and state level, is all very central to the structuralist tradition. The ideas in this approach, however, are engaged with in this thesis only insofar as the elements of their work are relevant to my attempt at framing what has transpired or are currently underway in terms of Ethiopian developmental efforts. They are combined here to inform a unique and slightly textured political economy understanding of whether or not there is indeed some form of genuine development dynamic happening even in a context, like the present case, which may appear on the surface to be corrupt or patrimonial.

The aforementioned approach to the study of development prizes an understanding of how the dynamics between the state and the private operate and is enticing because it has often taken the sometimes simplistic reading of the nature of this relationship, and advanced a far more sophisticated understanding that situates these relations in the context of the political economy environment in which they operate. The political settlement theory is relevant also, not necessarily because I intend to use it as a tool to re-establish the understanding of the Ethiopian

political settlement, but because it serves to compliment and sharpen the political economy perspectives, which already constitute a complex set of theories. In other words, political settlement theory is made relevant by the understanding that the key obstacle to the establishment of a productive capitalist class in many African countries has mainly revolved around the misalignment between the circuits of rent distribution that secure political power vis-à-vis the circuits of distribution that secure rapid accumulation and industry.

Section 2.1 sets the tone for the debates on industrial policy and indigenous African capitalism that follow in the rest of the chapter by defining industrial policy and acknowledging it as an important part of nationally constructed industrial development in successful developmental states.

Section 2.2 looks at mainstream perspectives of development and industrial policy and how neoclassical economics continues to view development as necessarily and intricately tied to free market forces and globalization. This conception of development has, however, not been able to solve the development conundrum of sub-Saharan African where structural transformation is yet to be attained. Where there have been attempts to build industry, especially in postcolonial African states, the overwhelming forces of globalization and liberalization that followed have been erosive to such attempts leading to premature deindustrialization and stagnation.

Section 2.3 constructs an alternative understanding of industrial policy based on structuralist perspectives. The special role of manufacturing in industrialization is discussed as well as the importance of the role of the state in selective and targeted industrial policy. The discussion brings attention to how industrialization has happened mainly on the basis on the development of national champions through infant industry protection, especially in manufacturing sectors that exhibit increasing returns. The question of linkages is explored in connection to the dynamic of developing domestic capital. It is argued that linkages in developing countries, between sectors and between various forms of capital, need to be purposefully engineered through industrial policy in order for them to successfully emerge. The historical disappointment of industrialization on the African continent is linked to the lack of linkages. Section 2.4 demonstrates the crucial role of import-substitution industrialization for the development of complex sectors in developing countries.

Section 2.5 constructs an understanding of firm-level learning based on the key notions of technological capability building and learning-by-doing. At the center of this understanding is the idea that learning during the course of the development of complex industrial sectors in developing countries is particularly complex due to the specificity of the learning environment and a steepness of the learning curve, which makes learning a far more demanding process. In addition, it is argued that learning associated with complex industrial sectors in developing countries cannot be assessed in the same manner as developed countries; there needs to be specific metrics for judging progress in developing country contexts in accordance to their level of development.

Section 2.6 introduces the dynamic of state learning and capacity. Adaptability and agility in the reversal of policy mistakes is discussed as one of the important indicators of state learning. The discussion is also strongly focused on the idea of reciprocity and the argument that an industrial policy without reciprocal control mechanisms (RCMs) is unlikely to lead to successful emergence since RCMs are the linchpin of industrial policy that makes linkages and learning possible. Attention is also drawn to theoretical insights mainly from Chibber (2002; 2003) that are termed collaborative state-capital relations and are organized under that section to discuss the complex dialectical relationship in state-business relations in developmental states as a necessary condition for the industrial policy to succeed. The experiences of East and South Asia are brought into focus to draw valuable lessons from the patterns of state-business relations in this region.

Section 2.7 engages the question of indigenous capitalist classes in specific relation to the manufacturing sector in sub-Saharan Africa (SSA). The section takes an in-depth look into the experiences of different countries on the African continent where there have been no domestic capitalists or where attempts to promote this class has been thwarted either by the prevailing political regime's interests or short-sightedness or by the very resistance from the incumbent group of capitalists or entrenched interests of rentier capitalists. The Kenya debate and the challenge to neopatrimonialism are revisited, especially in relation to how the state in Kenya attempted to encourage the emergence of domestic capital. Taken together with the developmental state paradigm, the whole discussion on African capitalist development has an

important function in the discourse that follows in chapters five, six and seven, which focuses on understanding the local capitalist dynamic in Ethiopia and the state's effort in promoting it.

There exists a strong role for the state, both as substitute and as planner and director of manufacturing industrialization, in the absence of a viable domestic private sector. With that recognition, a turn is made to the specific role of state-owned enterprises and military firms and the ways in which they can represent the state in efforts to bridge the gap of a lack of an indigenous class as well as its incubator. It is argued that the state and military can play a proactive role in promoting a variety of forms or areas of emergence in relatively complex sectors, while on the other hand a critical engagement of the real risks associated with the state or military's involvement in the economy and its likelihood of success is also highlighted. Experiences of advanced economies, especially in the post-war period, East Asian developmental states, as well as contemporary examples on the African continent are used to demonstrate the possibility of having an extremely powerful state and military that are positively integrated into the economic life of the country.

2.2 Defining Industrial Policy

Industrial policy is an absolutely central part of the analysis of economic development. It is a key instrument to promote the structural transformation of economies, which is itself closely related to the goal of development; developing countries catching up to now-developed countries (Chang, 2002; Khan, 2009). What now mostly constitutes the toolkit of industrial policy emerged as part of ad-hoc instruments adopted by early industrializers in attempts to promote the emergence of a range of industrial sectors. One of the very first cases of a documented industrial policy is that of 17th century United Kingdom textiles sector, where skilled textile artisans from the Netherlands were attracted to train workers in Britain in order to help British factories and workers to develop the necessary skills to develop a domestic sector (Reinert, 2007). The toolkit of industrial policy has since broadened over the centuries as policymakers discovered more useful policies.

With this discovery, the key role of the state in promoting capitalist development became more pronounced from the 19th century onwards with late industrializers such as Germany and the United States following suit with the adoption of a range of industrial policies as well as the

latecomer industrialization of the 20th century happening mostly in Asia. An important insight from the developmental state literature is that manufacturing-led development in developmental states has always been underpinned by proactive industrial and trade policies that were typically inspired by and often overlapped with nationalist and socialist ideologies. Even in South Korea, for example, which was not in any way a socialist country, the key driver to its industrialization was the imperative of independence from its neighbours, including China and North Korea as well as its former colonizer, Japan and to a lesser extent the extremely powerful United States. Industrial policy also became highly fashionable in the post-World War II world as many countries tried to rebuild their economies (Amsden, 2001)

Industrial policy often involves very complex and contentious debates. There are, therefore, many existing definitions of industrial policy, both broad and narrow, which seek to identify its scope and functions. Johnson (1982), for example, adopts a broad definition of industrial policy that includes policies designed to support industry, including fiscal and monetary incentives for investment, direct public investment and public procurement programs, incentives for research and development, major programs for the creation of 'national champions' in strategic sectors and policies for support of small and medium enterprises. One of the more useful definitions, that is adopted here is the narrow definition provided by Chang (2003:112) who defines industrial policy as a "policy aimed at particular industries (and firms as their components), to achieve the outcomes that are perceived by the state to be efficient for the economy as a whole. This definition is close to what is usually called selective industrial policy". This definition invokes the idea that it is the role of the state to select those industries/sectors or firms that it deems worthy of promotion in order to achieve growth in the broader economy.

Lall and Teubal (1998) make an important distinction between three kinds of industrial policies in terms of their sources, aims, objectives and impacts. The three different kinds of industrial policies are selective or targeted policies, horizontal policies and functional policies. Selective industrial policies are at the heart of industrial policies. They promote the use of sector-specific subsidies and protective instruments as well as the promotion of the emergence of national champions. One of the key insights from the developmental state literature is that the insertion of newly industrializing countries into the global capitalist economy was driven by national champions rather than an approach that simply allows foreign investors to come in and make

profits. This is one of the key differences between the more successful North East Asia and the lesser successful South East Asia. The support given to successful South Korean chaebols such as Hyundai, for example, is the kind of selective industrial policy that has been criticized for being akin to the often maligned strategy of picking winners. National firm leaders, whether belonging to the private or public sector, were mostly a product of government promotion or government targeting (Amsden 2001:193).

Horizontal policies are more neutral and tend to provide generalized support across different sectors. They may provide direct access to key infrastructure, promote R&D, and specialized training. Functional policies on the other hand are aimed at improving market operations via interventions such competition or trade policies that are designed to stimulate and enhance competitive pressures (Lall and Teubal, 1998). While many contentions prevail on whether selective industrial policy should be implemented by governments, much of the industrial policy scholarship shares consensus on the importance of horizontal policies. In fact, conservative mainstream economists have a strong preference for horizontal policies that are seen as neutral, do not discriminate between sectors and generally create conducive conditions for productive firms to flourish. They are, however, uncomfortable with the idea of promoting national champions or picking the winners because of the argument that the state does not have the sufficient and reliable information at its disposal to make economically rational decisions and judge whether and which type of industrial policy is most efficient and effective. According to this view, the state is not as good as the market at rewarding the most efficient or promising economic agents. Picking winners is treated with suspicion because infant industries supported by the government rarely come into maturity or grew up, but instead remained in perpetual need of government support (Rodrik, 2004; Rodrick, 2008). The political economy arguments of a high risk of political capture by special interest groups, particularly companies who devote their energies to "rent-seeking" instead of competing on the market as well as corruption, are also often quoted against the use of selective industrial policy (Pack and Saggi, 2006; Rodrik, 2008; Krueger, 1998).

While the mainstream conception of industrial policy suggests that industrial policy should either be neutral or conforming to comparative advantage (Lin and Chang, 2009; Lin and Monga, 2011), the experience of East Asian industrial policy, on the other hand, points to the fact that

there was nothing neutral about industrial policy. In East Asia, industrial policy created deliberate 'distortions' through the state "governing the market" that took the form of firm-specific skills, knowledge-based monopolies and the implementation of other types of entry barriers (Wade, 1990). Government's role involved 'joining' with the private sector to 'socially construct competitive assets' (resources, capabilities, and organizations) rather than create perfect markets. Rather than following the dictates of the market, Amsden (2001) argues that the state was often engaged in deliberately getting the prices wrong. Instruments such as subsidies, tariffs, exchange rates which may be used in a discretionary manner by the government contribute to major market distortions.

2.3 Mainstream Perspectives on Economic Development

2.3.1 What Leads to Development in Mainstream Economics?

The main difference between mainstream and heterodox approaches to the question of economic development fundamentally boils down to the issue of comparative advantage and how it is perceived as a development strategy. The role of the state in driving industrialization is a topic of major debate between neoclassical economists and Structuralists. On the one hand, neoclassical economists believe that an economy's dynamism flows from market exchange when markets are allowed to allocate factors of production based on free trade. They argue that comparative advantage should act as a guide to what a country should produce, and therefore, that is where it should allocate its factors of production. The mainstream economics tradition, which frames the state and its role in economic development in a negative light, follows the dominant logic in the broader neoclassical scholarship as well as the neoliberal economic order that both see the state largely as an obstacle to development as opposed to being an instrument of development. The idea is that the less state intervention there is, the better it is for the unfettered role of the market to operate more efficiently, which will ultimately result in better outcomes for the economy and society as a whole.

In neoclassical economic theory, the Hecksher-Olin-Samuelson model has become one of the key building blocks of trade theory and holds much relevance for thinking about questions of economic development. According to this theory, international trade will equalize the prices of factors of production - labour and capital - and countries will trade according to their factor

endowments. Countries that have abundant, and therefore, cheap labour will trade more in labour-intensive goods. In developing countries, especially on the African continent this mostly translates to the production of primary commodities vis-à-vis advanced industrial goods produced by developed countries. This process will inevitably lead to an increase in the remuneration of the scarce production factors, and therefore, the ultimate outcome of trade will be global factor equalization. What this theory, therefore, promises is that an engagement in free trade will result in a convergence of wage levels across the world, something that would not happen if trade was regulated.

The Hecksher-Olin-Samuelson theory reflects a view of the world according to which state intervention will always be bad, whatever the circumstances. As a result, the optimal allocation of factors of production that will lead to development can take place under conditions where the state is absent or reduced to absolute minimal interventions. The biggest argument against defying comparative advantage is that the attempted cure is worse than the ill itself. In other words, it is far more dangerous for a developing country that may have a comparative advantage in relatively unsophisticated good and services to try achieve the impossible in their attempts to shift towards the production of more complex goods than it is for it to stay where it is in terms of its comparative advantage. For, attempts to do so will inevitably unleash problems of inefficient allocation, corruption, rent-seeking and failure, far greater than if the country had remained producing relatively unsophisticated goods and services (Deraniyagala and Fine, 2001; Subasat, 2003). Even though the assumptions and mechanisms of Hecksher-Olin-Samuelson theory have been challenged as unrealistic, it remains firmly in place within neoclassical economics. In the real world, the fundamental assumptions of the theory dissipate when we think about how even the most pro free-market or pro free-trade governments rely heavily on the state, even though they do not openly advertise this.

Another key proposition of neoclassical economics is that sectoral composition in the economy does not matter. In other words, all economic sectors are productive and there are no qualitative differences, per se, between economic sectors in relation to the process of driving economic development. The manufacturing sector and its relevance to the economy is, therefore, no more special or productive than any other sector and multipliers and linkages between them do not significantly matter. The starting point to decisions on production are an economy's capital,

labour and natural resource endowments and the key to development is in allowing the structure of production to move in conformity to comparative advantage. In fact, from this perspective, a country that is well endowed with agriculture, primary commodities and labour should focus on the production of those commodities and not try to venture into manufacturing (Shafaeddin, 2006). While the manufacturing sector is generally becoming more recognized by some sections of neoclassical theory, the way in which it should develop is still confined to 'easy' sectors that can be simply defined as those that are more or less aligned to a country's present comparative advantages. By sticking to the 'Ricardian' strategy, what can be produced by firms in low-income countries are low-cost and low-quality products such as clothing and leather.

These recommendations flow directly from the theory's support for free trade and free economic exchange. It is particularly the case in exogenous growth models that consider growth to be ultimately determined by the accumulation of factors and also by technological change. However, technological change is considered to be exogenous and, thus, cannot be influenced through state policy. In the Harrod-Dommar Model, savings, which are assumed to drive investment, are a key explainer for long-term growth and this can only be fostered by having free trade and allowing economic actors to allocate productive factors as efficiently as possible, without allowing for an external government intervention. This picture gets somewhat nuanced (challenged) by endogenous growth theory where it is found that the education and R&D sectors can play a fundamental role in promoting growth because they facilitate the adoption of more complex technology (Krueger, 1986).

2.3.2 Washington Consensus Era: 'No Industrial policy is the Best Industrial Policy'

While industrial policy has been hailed as a key instrument for development success, it has also been the target for criticism from mainstream economists (Krueger, 1998; Pack and Saggi, 2006). As a result, it has been maligned and associated with a lot of failures. The rise of the Washington Consensus in the 1980s came in as ferocious challenge to state intervention. Any form of state intervention was viewed as bound to lead to the misallocation of resources and was seen as an impediment to the operation of an all-powerful free market (Fine, 2001). The Washington consensus was underpinned by the neoliberal dogma of Bretton Woods institutions, the World

Bank (WB) and the International Monetary Fund (IMF), and fueled by neoliberal policy advocates (President Ronald Reagan in the United States and Prime Minister Margaret Thatcher in Britain) who saw state intervention as the ultimate evil and pushed for a large role of the private sector in the economy and provision of public services as an alternative to a large role of the state. The principles and agenda of the of the Washington Consensus were implemented in Sub-Saharan Africa, mostly in exchange for loans and funding from the Bretton Woods Institutions.

The era of the Washington Consensus marked an explicit rejection and opposition to industrial policy where the argument was that "industrial policy has no place in economic development" (Shafaeddin, 2006:11). Instead, free trade policy was embraced as a silver bullet for development in almost all sectors of the economy, and became the end of development in and of itself. The rhetoric and scholarship was one of commitment to free market forces, and practice too was shaped by the structural adjustment programmes which sought after privatization, liberalization, and deregulation, macroeconomic stabilization and essentially to promote the interests of private capital (Fine and Wiesenberger, 2013). The use of instruments such as selective protection was viewed with deep suspicion due to the unwarranted belief that the state would use these in an unfair manner to promote certain groups in society. In this light, governments are chronically unable to intervene efficiently in the market processes, and will instead exacerbate market failure rather than alleviate it. To further locate their criticism, industrial policy critics invoked the idea that industrial policy is akin to mercantilist (i.e. beggar-thy-neighbour) policies.

Evidence presented by developmental state theorists over the years has shown that the Washington Consensus perspective on industrialization was deeply problematic (Chang, 2006; Deraniyagala, 2001; Fine, 2011). There have been some very deep damages caused by the liberalization policies of the Washington consensus. One of them is premature deindustrialization or growth reducing structural change. This simply means that the structure of the economy typically tipped back from an increasing contribution of manufacturing in GDP towards agriculture and services sectors. Even so, the composition of services, for example, has not made up of advanced services that which emerge once mature industrialization has been reached, but low-level services (Rodrik, 2015; Andreoni and Tregenna, 2019). Cramer's (1999) research is very illustrative in showing how, for example, how the lifting controls, cutting of taxes and

export ban on raw cashews in Mozambique at the request of the World Bank in the 1990s led to the collapse of the Mozambican cashew nuts sector as trading firms began shipping and processing cashews elsewhere. In the 1960s before this collapse and before the protracted civil war, Mozambique had successfully designed a number of interventions that ensured that all cashews are processed locally, thus defending its cashew nuts sector much like other countries such as Taiwan and Brazil. The fairly straightforward process of transforming what would otherwise be cheap raw cashew nuts into a well sort-after commodity in export markets was a very profitable and employment-generating business for small industrial outfits that sourced the nuts from local out growers.

This Mozambican case is no different to many other cases in Sub-Saharan Africa where the World Bank's promise of explosion in a number of sectors once the 'sclerotic' role of the state is removed did not materialize. Instead, sectors have often collapsed with many jobs disappearing with them. In many respects the Washington Consensus has played a direct negative affect on attempts of promoting industrialization and sometimes contributing to a reversal in the trend of industrial growth, especially in Sub-Saharan Africa (Mkandawire, 2001). It is the kind of medicine that was dealt to a number of African countries during the time of the structural adjustment programmes (SAPs) implementation and the ensuing debt crisis that precipitated the disastrous economic and socio-economic problems that soon followed, more especially during the so-called lost decade of the 1980s. The medicine, to be specific, was largely an overdose of a neoliberal set of policy recommendations that was not suitable for African societies and weakened the fragile manufacturing experience (Mkandawire, 2001). This had huge deleterious consequences for state capacity, causing a shrink back to what was becoming a fairly capable government bureaucratic system. Additionally, the consequence was the restructuring the state with the resultant effect of cutting down civil service pay and reducing the size of civil services, leading to state capacity de-building (Segatti and Pons-Vignon, 2013) .

These budget cuts have also been associated with the pooling of resources to typically try and build capacity of Ministries of Finance, which is the channel where mostly of the donor aid from abroad comes and through which the SAPs and stabilization programmes were being managed. This often made the Ministry of Finance, whose DNA lies in trying to reduce and control spending and not necessarily in targeting spending towards industrialization, transformation and

growth, the de facto coordinating institution within governments (Mkandawire, 2001; Segatti and Pons-Vignon, 2013). On the other hand, evidence coming out of developmental states that were successful in promoting development shows that that the coordination of industrial policies was typically managed by industry ministries or agencies, such as MITI in Japan and not the finance ministry.

The process of transitioning from colonial administrations to independent administrations was, therefore, brought to a screeching halt. To nip these newly fragile states in the bud, the way SAPs did, had long-lasting consequences on these states because they were just in the beginning of dynamic processes of learning, investment and states formation that they hoped would drive industrial development. Many countries were pushed into premature deindustrialization and became locked into a low growth trap. The deindustrialization happened before these countries could reach, through mature industrialization, a stage of acceleration, growth and employment creation that could be pulled by the manufacturing sector as was the case with East Asia. In addition, the wave of SAPs forced countries to give up on their strategic trade and industrial policies and other protective measures, which led to far more weakened industrial structures in the face of waning support and protections of industry (Mkandawire, 2001).

2.3.3 Post-Washington Consensus Era: Market-Failure Approach to Questions of Development

After a long period of maligning the state, the early 1990s marked a departure from the Washington Consensus due to dissatisfaction with the outcomes of the Washington Consensus. The advent of the Post-Washington Consensus came with the recognition that there can be fundamental market failures due to information failures, transaction costs or imperfect competition, especially in developing countries (Krugman, 1995; Stiglitz, 1996). The Post-Washington Consensus acknowledges the need for government intervention, but only in so far as it addresses market failures and imperfections and the uncertainties that are inherent within market dynamics. This, therefore, opens up the scope and opportunity for industrial policy to deal with and correct market failures with the hope that this will allow participants in the economy to discover where their comparative advantage lies. In this view, industrial Policy is seen as discovery process in which the state must elicit information from the private sector if it is to adopt and implement the right policies (Rodrik, 2008, 2011).

Under this augmented market-led approach, the role of the state should be limited to the provision of hard infrastructure such as telecommunications, roads and transport as well as soft infrastructure such as regulating the financial system, institutions, and improving the education system. It must also allow conducive conditions for business and investment, maintaining peace and order, fighting corruption, and the transmission of technology to emerge (Krugman, 1995; Stiglitz, 1998; Lin, 2012). The pervasiveness of government failure in market economies can be dealt with by enhancing and improving the performance of government (Stiglitz, 1998) mainly through the promotion of good governance and democracy (Rodriguez 2011). The market is understood as being embedded in non-market institutions such as property rights, regulatory institutions, institutions for macroeconomic stabilization and for social insurance and conflict management, and these institutions need to function in such a way as to serve the needs of the market (Rodrik, 2000). In all these interventions, the state must be careful not to descend into rent-seeking by over-extending itself into picking and creating winners because it cannot do so (Krueger, 1974).

2.3.4 New Structuralist Economics and the Revisionist Resurgence of Industrial Policy

Industrial policy has undergone an even deeper 'resurgence' on the African continent with a notable increase in the number of empirical studies on industrial policy from the beginning of the last decade (Lin and Chang, 2009; Lin and Monga, 2010; Lin, 2012). One approach to industrial policy that has particularly risen to fame is the New Structuralist Economics (NSE) of former World Bank Chief Economist, Justin Lin. The NSE quickly gained ground in the wake of the 2008 financial crises and somewhat brought industrial policy back in fashion. The problem, however, is that it is doing so on limited terms with a vision of a facilitating state that merely needs to create favourable conditions that will allow for the procession of industrial take-off. The main pathways to development under the NSE typically entail the attraction of foreign direct investment, insertion of firms operating in the domestic economy into global value chains (GVC's) and seeking opportunities for upgrading once located in the GVC's of light manufacturing sectors (Dihn, Palmade, Chandra and Cossar, 2012).

The NSE claims that there are serious constraints in the global trading regime and in global value chains that have changed the rules if the game. This is taken to mean that the tools that were

relevant for East Asian countries, for example, hold little relevance in the 21st century and so industrial policy and industrialization will be different in this era. It is, therefore, essential for developing country governments to target industries (low-technology and labour-intensive) that are not overly ambitious and that can be managed with the available limited state capacity as opposed to complex heavy industries, which have often been a failure (Lin and Monga, 2010). The NSE somewhat overlaps with the arguments of Rodrik (2011) who mainly sees industrial policy as a tool of the state to help countries discover and exploit their latent comparative advantage as opposed to defying their comparative advantage. In the simplest terms, "latent" comparative advantage is taken to mean that countries should prepare themselves for market participation in what will be appropriate sectors in a decade or so in the future (Fine, 2013). While the NSE is certainly slightly more pro-industrial policy and more interventionist than the Washington Consensus or previous market-led approaches, the way Fine and Waeyenberge (2013) see it is that it not only amounts to a limiting of the role of the state whilst seeming to argue otherwise, but also narrows down how industrial policy is conceived. The NSE's understatement of specific political economy considerations and its denial to the importance of pro-active industrial policy make it unimpressive, especially in the economic environment of Sub-Saharan Africa where industrial policy has to be strong due to lack of structural transformation**.**

2.4 Structuralist Theory and the Role of the State in Economic Development

2.4.1 Structuralist Perspectives of Industrial Policy

The structuralist approach to industrial policy, which has its roots in Latin America and a body of literature rooted in concrete conditions underscored by development theories and empirical engagement, offers a much more adequate understanding of the role of the state in development. Scholars such as Raoul Prebisch, Hans Singer, Celso Furtado, and Oswaldo Sunkel argued in favour of the transformation of the industrial structures of developing countries from the primary production of raw materials and natural resources towards value addition, manufacturing and industrial goods (Hunt, 1989; Amsden, 1997). Their theories of industrial development are rooted in empirical evidence, which shows that periods of high and sustained growth were led by manufacturing accompanied by state-led industrial policy (Amsden, 1997; 2001). By looking at these observations, there emerges a set of principles by which the essential foundations of

industrial dynamics are induced and can be tested and refined against specific national, sectorial and industry case studies (Amsden, 2001). Structuralist theorizing has, therefore, resulted in a diversity of approaches in the study of industrial policy that seeks not to apply a one-size-fits-all model but one which is context specific and tries to find decisive factors that affect performance for any one nation, sector or industry (Fine, 2013). This context specific exercise, which is advocated for by Fine and Rustomjee (1996:16), allows the economy itself; its nature and character to define for us what the industrial policy should be.

From a structualist perspective, the notion that the market is a fundamentally superior mechanism for resource allocation makes no sense, and is therefore rejected. Importantly, Industrial policy crucially involves the role of the state in which there is a strong attachment to in prospective late comers and their attempts to promote the economic growth and development. Its focus is on the ability of the state to make development decisions based on policy autonomy. For industrial policy to work, the state should be able to design and implement performance conditions that are to be reciprocated by capital in exchange for support given by the state. Furthermore, the state must be involved in monitoring the behavior of capital as opposed to the mere creation of favourable conditions.

Evident in these anti-state views are three main fashions in the approach of those who are opposed to the greater role of the state in the economy (Hirschman, 1981). The first one is the perversity argument where it is argued that any attempts at improving the economic or social order will have the opposite effect of that intended. The second is the futility argument where any attempt at changing the economic or social order is seen as doomed to fail. The third us the jeopardy argument where any attempted changes will carry with it a cost that is dramatically higher than what has been previously achieved. Hirschman (1981) argues that what lies behind those arguments is much more of a class project than an actual rejection of the state.

2.4.2 Infant Industry Protection

The theory of infant industry promotion offers a very different version of economic development from the one offered by the theory of comparative advantage. In the infant industry argument, the main causes of underdevelopment are weaknesses in productive capabilities which are

essential for economic and industrial development. The role of protection in early industrialization in Western Europe has been well documented by authors such as Chang (2002). In addition, empirical studies of the East Asian newly industrialising countries have documented the role of strategic trade interventions in promoting manufacturing growth, technology upgrading and industrial deepening (Peres and Primi, 2008). Contrary to the neoclassical perception that now-developed countries have become rich by pursuing free trade policies, Chang (2002) indicates that countries like Germany, Britain, United States of America, and France, did have industrial policies that intervened in markets through the usage of tariffs to protect infant industries. Deraniyagala (2001) argue that the mainstream account of free trade as the only winning model of trade is a myth. It overlooks the historical experiences of industrialised countries which depended on varying degrees of selective protection in conjunction with other factors and industrial policies (Peres and Primi, 2008).

Structuralists find use in protection being confined to the manufacturing industry, which has high technological and production linkages with other economic activities, unlike agriculture (Shaffadien, 2000; Peres and Primi, 2008). List (1856) emphasised that in order to avoid the danger of monopoly power and inefficient use of protection by domestic firms, protection should not be given for prolonged periods of time and at unnecessary high levels. It is essential to understand the infant industry argument in the context of emulation and catch up strategies; as a way of catching up with early industrializing countries in the development and industrialization process which are way ahead of other newly industrializing countries (Chang, 2002). The reasoning behind the argument is that industries in developing countries have difficulty competing with established competitive firms in developed countries and so protection should provide them with enough time to develop until they can compete internationally (Shafaeddin, 2000). It is only after reaching a certain level of maturity and achieving the gains of learning-by doing that domestic firms can engage in competition with their international competitors and trade liberalization can be gradually restored (Peres and Primi, 2008).

2.4.3 The Relationship Between Industrialization and Development

The empirically observable link between industrialization and development has been established in the development economics literature and revolves around two main ideas. The first one is that due to poor countries predominantly being involved in the export of raw materials, primary

commodities and agricultural goods, they are subject to deteriorating terms of trade. The implication is that if poor countries do not make attempts at structural transformation so that they diversify their export baskets, they are unlikely to be engaged in a sustained process of growth acceleration and, therefore, structural change that would allow them to catch-up with the developed world. The second idea is that high productivity growth, which is the basis for rising per capita incomes, can only be attained through industrialization and through the production and exporting of ever more complex goods. While the Prebisch-Singer theory does acknowledge that exchange matters, it also draws strong attention to the deep structural inequalities that exist between developing and developed countries that make the former vulnerable to declining terms of trade. An excessive focus on agricultural and commodity market subjects developing countries to highly volatile world market prices.

What is more important is an allowance for a shift to more complex products, which has much to do with productive dynamics that are not only influenced through the dynamics of the markets, but state policy has a major role to play in this regard. The heterodox vision of industrialization is aligned to the 'Kaldorian' strategy of development, which derives from Kaldor's (1967) theorization of industrial development. At the core of the strategy is the understanding that comparative advantage as a present reality in terms of what a country is currently better at producing, but ultimately recommends for developing countries to steer away from it and move onto a higher growth path. The kaldorian strategy revolves around the special properties of the manufacturing sector, increasing returns, complexity, learning-by-doing, infant industry protection, rapid technological development, and linkage formation.

2.4.4 Manufacturing as an Engine of Growth and Structural Transformation

When applied to poor countries today, the prescriptions of neoclassical theory and the Washington consensus manifest in the promotion of small scale agriculture or services instead of manufacturing as a way forward to development. Such advice is akin to Morgenthau Plan that was devised by former United States Secretary of Treasury, Henry Morgenthau, and entailed a strategy for the destruction of manufacturing and industrial capabilities in Germany after the Second World War and to instead turn Germany into a pastoral state in order to deal with the threat of the political rise (Reinert, 2004). The hope was to push Germany into primitivization by

reducing it to nothing more than a primitive state that was engaged in non-complex activities that are not typically associated with rapid growth and catch-up. Today, the typical and problematic policy advice directed to developing countries in the Global South, in the form of free trade and other Washington consensus-type policy, amounts to Morgenthau Plans (Reinert, 2004). Reinert (2004) shows how Mongolia has been subjected to a de facto Morgenthau Plan, thereby killing off its industry, by virtue of adopting free trade and loss of increasing-return activities.

From a structuralist perspective, the key to unlocking catch-up and moving beyond the simple take-off phase of industrialization rests in the ability of developing countries to make a leap from producing simple low-technology activities in light manufacturing to more advanced industrial activities that are considered medium or high-technology with increasing returns. Thus, the main challenge for developing countries is to find a way to deliberately change their capabilities from low technology, labour intensive industries to these high technology productive capabilities (Chang, 2013; Khan, 2000). Structuralist economists such as Kaldor (1967) have argued that the manufacturing sector, due it is special characteristics that account for quicker economic growth, multipliers, linkages and development, technological change and improvements, including that that will have decisive impact on other sectors, has a special role to play in any country's attempts to industrialize. The special characteristics of the manufacturing sector are captured by Kaldor's growth laws (1967) that revolve around a few key defining characteristics of manufacturing:

- There are increasing and irreversible gains in productivity of capital and labour.
- Manufacturing determines the productivity of the economy as a whole.
- Manufacturing sector creates dynamic linkages between productivity gains in manufacturing and the economy as a whole.
- Manufacturing draws surplus labour from the agricultural and services sectors.
- The manufacturing sector is the most dynamic source of income, savings, demand and foreign exchange that are important for development of the whole economy.

Technologically complex manufacturing sectors are of particular interest due to a learning potential that cannot be found in 'easy' sectors. This is because of the hypothesized increasing returns to scale and associated steep learning curve for a low-income country such as Ethiopia.

The technological know-how, skills and managerial sophistication required for medium-and higher technology sectors such as engineering, equipment and components manufacturing generally supersedes that of low-technology sectors. These sectors typically require much more considerable amount of learning time and effort, reasonably stronger capabilities for training labour, and a cadre of reasonably sophisticated business leaders (Lee, 2019). Complexity, from a Sub-Saharan African regional context, needs to be understood also in the particular context of the difficultly of the majority of countries in the region to scale up from low-technology manufacturing to medium-and high-technology sectors (UNCTAD, 2013). Engineering parts and components, which are beyond the reach of countries in Sub-Saharan Africa due to the absence of highly specialized precision equipment and machinery in these countries, can be grouped in the category of complex or advanced activities.

If we accept that developing activities that demonstrate increasing returns are an absolutely necessary condition for developing countries to develop, as was the case in the NICs, we also have to accept that such development will not happen easily. The challenge of developing complex sectors is that the starting point on the learning curve for developing countries is below the constant-returns to scale curve. At this point, production embodies a lot of inefficiencies and low-productivity. Overtime however, due to the fact that manufacturing quintessentially entails intense learning-by-doing and a learning period, the curve moves over and above constant returns to scale and starts to exhibit increasing returns to scale (Khan, 2009)

2.4.5 Linkage Formation; Between Sectors and Between Economic Actors

What economists typically look for when assessing the efficacy of industrial policy are a range of measures that can be captured by a variety of quantitative proxies such as exports, industrial growth rates, manufacturing value added growth rates, productivity, real output, etc. However, Lee (2013:65) points out a common mistake where "outcomes are often seen in aggregate industrial figures such as production or exports; these are however not a sufficient indicator for success". The question of industrial policy is not properly grounded if its effectiveness is only evaluated based on the achievement of such targets and aims initially set out in the policy. An assessment from this perspective likely amounts to some kind of reductionism that chiefly prizes the 'effectiveness' of state institutions in setting and implementing the 'right' kind of policies,

facilitating market access, or giving the appropriate incentives and or firms responding efficiently to market signals or forces facilitated by the state. Khan (2016:12) espouses the view that the developmental capabilities of a state are to be judged “not based on a reading of growth rates achieved, but on the success of policy in developing new competitive sectors and capabilities".

A big part of the historical and contemporary industrialization failures in developing countries have much to do with the inability to build sufficient linkages to accelerate and diversify. This is crucial because of what Hirschman (1989) argues about linkages; that they do not develop automatically, but are largely an outcome of state interventions. History shows, however, that it is much easier to build linkages if you have a domestic class of industrial entrepreneurs (Amsden, 2008). Due to non-existence or weaknesses of domestic African capitalists or a lack by the state to pressure them towards emergence, what is likely to emerge instead of linkages is an increase in imports of intermediate and capital goods during that stage when a country is heavily investing in manufacturing and other industrial projects. The structural development economics of post-world war period reflects on why and how ISI is crucial in order to deal with the problem of imports in developing economics (Amsden, 2001 Hirschman, 1968). This literature shows how escalating imports often result in a common crisis in the developing world; a significant drain in foreign exchange reserves if the ability to mobilize foreign currency is not generated fast enough through other means such as exports. If a country manages to build the capacity to develop or manufacture the capital equipment, then it will avoid hitting a Balance of Payments (BOP) wall. Growing middle classes also add to these BOP constraints due to their wants of importing luxury goods (Hirschman, 1968).

Essentially, the development of a domestic capital goods sector is important since they have crucial backward linkages with agricultural or transportation activities that are vital to the industrialization process (Hirschman, 1958). Hirschman (1958), in his linkages framework, placed great emphasis on the targeting of sectors that displayed strong interdependencies with other sectors or have a higher degree of linkage effects. Policymakers need to be guided by the presence or possibility of linkage effects in the selection and promotion of sectors. Linkages, however, do not happen automatically. They must be nudged via a proactive industrial policy. On the one hand are backward linkages, which arise when an opportunity in a new activity or

sector opens up to supply inputs that are needed in an already established sector. The way to think about forward linkages, on the other hand, is that they are generated through the promotion and development of activities or sector that will procure outputs of an already existing as its own inputs. Oqubay (2015) shows how Ethiopian policymakers have been energetic and deliberate in the creation of linkages between, for example, the Ethiopian cement sector and the large government housing programme.

By placing the more conventional quantitative proxies at the centre of the analysis, mainstream perspectives tend to delink other important measures such as the alteration of the conditions of accumulation and the enabling of new forms of accumulation to occur. Shifting the analysis to this direction helps with a deeper understanding of "the way in which underlying economic agents with different economic interests are linked to each other" (Lee, 2013:63) For Lee (2013:63) this is what importantly "needs to be at the heart of any analysis of industrial policy" and defines the extent to which it is successful. This view of industrial policy places an emphasis on technological capability building in domestic firms and the formation of linkages between domestic and foreign firms, which from the heterodox perspective are crucially relevant variables for domestic learning.

Concerning the options available to developing countries when choosing what strategy to adopt when approaching project execution, Whitfield, Therkildsen, Buur, and Kjaer (2015:19) argue that "there is a tension between the ability of foreign firms to deliver immediately in ways that low-capability domestic capitalists cannot, and the need for industrial policy to build the capabilities of national firms – and the multiplier effects that come with that in terms of skills, employment, and economic linkages". Heterodox political economy literature is particularly helpful when confronted with such cases because it tells us that success should importantly be reflected in the gradual increase in the relative importance of domestic capitalists to the economy in terms of their ability to provide incomes for a significant percentage of the population and they must have relative importance as a source of government revenue and/or foreign exchange.

While the success of developmental states, in North East Asia especially, would not have been possible without a push for export expansion, the state insisted that the exports were mostly borne out of developmental linkages between foreign firms and domestic firms. In places such as

Taiwan, the government created forced marriages between firms such as Philipps and domestic firms to ensure the development of capabilities in the domestic glass industry (Wade, 1990; Amsden, 2008). In cases where foreign direct investment (FDI) operates in cosy policy environments, such as export processing zones, they may provide little benefit, apart from contributing to the tax and income base of a country if they are not constrained by the state through reciprocal control mechanism to expand localisation opportunities in the development of local technological capabilities. An excessive policy focus on exports may create economic enclaves as was often the case with places such as the Mexican Maquiladoras or some South East Asian countries where lucrative incentives were able to attract foreign firms and thereby create a thriving export base without formation of linkages and spill-over effects to local suppliers.

The paradox of success in industrial policy, more especially if it is FDI-centric, can also be observed across many sectors or nodes of economic activity in Africa where much of the economic activity has become enclave sources of profitability for transnational firms. The example of the Tanzanian phosphate factory is an instructive example of how to get an industrial project going with relative efficiency, but have minimal domestic linkages (Lawrence, 2005). Lawrence (2005:1128) argues that "in spite of the existence of domestic sources of phosphates, all chemical inputs were imported at a specially constructed jetty for the factory. The idea that foreign investment would generate linkages back into the domestic economy was replaced by a practice which minimized these linkages, as foreign partners found it easy to provide a package of fixed and working capital inputs which matched the technology they supplied".

Similarly for the case of the Ethiopian clothing and textile sector, which is mostly housed in Africa's largest industrial parks programme where employment creation and foreign currency earnings are important and exports are expected to take-off rapidly in the near future, is dominated by foreign firms that have shown little interest in transferring technology and expertise to even the few domestic firms within the industrial parks. The situation in government-sponsored industrial parks is not too different from private industrial parks such as the Eastern Industrial Park where there are no domestic firms and those operating outside the parks play a minor role in the industrial parks ecosystem by way of inputs supply (Giannecchini and Taylor, 2017).

Another example of a technological enclave in Ethiopia is the horticultural sector where research (Helmsing and Melese, 2010) has shown how despite the impressive performance in exports and a sizable share of domestic ownership (Oqubay, 2015), the sector somewhat remains a technological enclave since the domestic firms only benefit marginally from spill-over effects in terms of technology transfer, knowledge sharing and other agglomeration effects. What otherwise appears to be an example of exceptional success may only be a superficial reading of what the actual reality in a sector if a certain theoretical lens either privileges or under-privileges certain variables in assessing the outcomes of that sector. For example, while it is laudable that Ethiopian cement producers have emerged as one of the biggest and competitive cement producers in East Africa even exporting cement to other African countries, despite the sector not conforming to comparative advantage, they have not been able to create opportunities for lateral migration in capital equipment (i.e. development of technologies that could be used laterally in other sectors) through learning-by-doing (Oqubay, 2015).

2.5 Import-substitution Industrialization and the Development of Complex Industrial Sectors

A critical dimension to supporting the development of a domestic capital goods sector quintessentially involves the need to avoid balance of payment (BOP) constraints, which are a big obstacle to development. If all a nation does is to import capital equipment and other key metals and engineering inputs in order to build its industrial base or support manufacturing of consumer goods, it runs the risk of serious BOP constraints. Unless a country gradually develops the capacity to domestically manufacture metal and engineering sector inputs that are required for domestic infrastructural projects that will be the key to unlocking the potential of economic actors, it will forever be borrowing from international debt markets in order to import all of the inputs required from these infrastructural projects. In the short-tem, the possibility of expanding exports of light manufactured goods might provide a pushback on the BOP constraints, but the development of a dynamic export sector that can finance imports takes time and the prospects of a crisis will be forever looming. Therefore, the need to develop capabilities to manufacture the capital equipment for use in a number of manufacturing sectors and industrial projects becomes imperative (Hirschman, 1958, 1968).

The development of a capital equipment sector in developing countries takes places through import-substitution industrialization. However, some of the scholarship has fallen for the myth that not only sees import industrialization and export-led growth as perfect substitutes, but export-led industrialization is far superior. East Asia's development is typically viewed as being tied to export-led growth and industrialization, while Latin America is viewed as an example of unsuccessful industrialization, mainly due to its continued focus on import-substitution industrialization (World Bank, 1993). While it is true that no developmental state was able to catch-up without successfully developing the capacity of its firms to build export capabilities and become globally competitive, the idea that export-oriented industrialization and import-substitution industrialization are mutually exclusive is unfounded. Even in East Asian developmental states, more especially where complex manufacturing sectors or activities that exhibit increasing returns to scale is involved, EOI was preceded by ISI, and the latter was pursued for a lengthy period of time (Amsden, 1989).

The viability of ISI industrialization has also been called into question due to its so-called failures that were observed in Latin America and Africa where ISI is argued to have initially given rise to an exuberant and booming atmosphere of expansion opportunities before it was brought to a grinding halt and predictably fell into the trap of exhaustion due to small market sizes, minimum economic plant sizes and state corruption (Hirschman, 1958, 1968; Chibber, 2002). Instead, Hirschman (1958) argues that it is rather the kind of import-substitution industrialization that does not go beyond the easy and first phases of import substitution (soft-drink bottling plants or cosmetic and pharmaceutical industries), where the manufacturing process is entirely based on imported materials and machinery, which is bound to get stuck after an initial period of exuberance, expansion and boom only to fall into decline due to the exhaustion of easy import-substitution opportunities.

In Africa, one major and fundamental omissions of the literature when documenting the early post-colonial experience, namely that the ISI-driven industrialization did not work is the glossing over of the serious industrialization attempts in the 60s and 70s (Mkandawire, 2010). Such omissions close avenues for us to learn about the dynamism of SSA manufacturing during that period and the lessons we can draw from the failures and successes of the time. Mkandawire (2010) demonstrates how, with all the fresh challenges that SSA post-colonial governments were

faced with in the 60s and 70s, growth rates in the immediate post-independence period and well into the 70s were very much solid, although sometimes not very rapid. These impressive growth rates were accompanied by an accumulation of invaluable manufacturing experience, as Mkandawire (2010) has shown. It was the trade liberation regimes adopted by most Africa governments and the privatization of the structural adjustment period that delivered a blow to the capacity in higher sophisticated and capital-intensity built during the import-substitution industrialization period (Lawrence, 2005; Mkandawire, 2001). Lessons for the future of SSA industrial development need to be constructed upon a proper understanding of the past; otherwise all that economists will do is to merely throw their hopes and expectations at the continent in the form of a to-do list of strategies.

The conventional wisdom sees ISI as a process that typically starts with the manufacture of finished consumer goods that were previously imported and then moves on, more or less rapidly and successfully, to the "higher stages" of manufacturing of intermediate goods and machinery. Such a view follows similar logic to the perspective of the flying geese paradigm, where industrial development should logically follow an orderly and market-rational sequence at both national and regional levels. In the flying geese model of development, catch-up in developing countries happens in four stages. The first stage involves mainly the exporting of primary goods, and importing of consumer goods. The second stage includes exports of some limited consumer goods, and lesser imports of consumer goods, but an uptake in the imports of capital goods. The third stage is dominated by exports of consumer goods that features a few capital goods, and imports of capital goods. In the fourth stage the composition of exports begins shifting from consumer to capital goods, while imports of consumer and capital goods as well as raw materials still takes place in varying degrees (Kasahara, 2013).

The flying geese model is itself closely related to factor endowments and comparative advantage ideas about how it makes more rational sense for a country that has an abundance of unskilled labour and scarcity in technology, for instance, to start out with the lower tiers of low-technology sectors as these are more attuned to their comparative advantages. The argument is that low-income countries should be realistic and not overambitious. Accordingly, it would not make much sense for them to target and promote sectors in the higher rungs of the industrial ladders such as capital-intensive or high-technology or knowledge-intensive R&D sectors as attempts to

do so would result in dramatic failures due to being incommensurate with the factor endowments of developing countries (Lin, 2011).

While Lin (2011) and Lin and Monga (2010) may make some relevant points in their proposition for developing countries not to aim for the impossible, their propositions are, however, not by any means enough to undermine the fundamental propositions which developmental state theorists put forward in arguing that developing countries can work towards building their comparative advantages. While ISI can begin in the form of an easy Ricardian strategy it needs to shift to the Kaldorian strategy, if it is to generate self-sustaining growth (Schwartz, 2010). The benefit of a sequential pattern of industrialization, when adopted by late-late industrializers, is that it is often undertaken with known processes and therefore generally becomes far smoother and less disruptive affair that can and does manage to bring in complex technology. The shortcoming, however, is that it does tends to be a far less learning-intensive and without the sustained technological experimentation and concomitant training in innovation which are characteristic of the pioneer industrial countries.

This problem with many of the models that view development as a highly sequential or tightly staged affair, as Hirschman calls it, is in that they unrealistically see industrialization as a predictable and successive process that works its way from the manufacture of light consumer goods industries, then proceeds to heavy and capital goods industries, and eventually to consumer durables. Hirschman's (1968) observations of industrial development in the developing world, however, point to the fact that there is no reason why ISI cannot in some cases start with the "higher stages" in the manufacture of machinery or at least with the simultaneous manufacture of these goods with finished consumer goods. According to Hirschman (1968:7) "even when the earlier industrializers were predominantly in the light consumer goods stage (from the point of view of labor force or value added), they were already producing their own capital goods". More specifically, the complex reality of East Asia (with diverse characteristics among regional countries) does not neatly present itself for an orderly catching-up process (Kasahara, 2013).

The question then of what sectors should be targeted by the ISI process circles back to the highly debated industrial policy issue of whether the emergence of sectors can and should be decided upon by the state or be left to the market. Khan (2015) argues that while no state necessarily has the precise capabilities to pick winners, the decision by policymakers on which sectors to promote should be taken in consideration of the challenges of unemployment and constrained economic development in developing countries. Ideally, the targeted sectors should be guided by three considerations: 1) it should be sectors that hold wide opportunities for domestic entrepreneurs to rapidly enter production; 2) sectors that fulfil the conditions of employment generation and; 3) sectors that have maximum positive spillovers and linkages with other sectors in order for economic development to be spurred further. For Khan (2015) countries that are within or targeting the status of middle-income status in the near future can target medium technology sectors that serve as supporting industries such as electronics and engineering and automotive parts that mainly provide inputs and components to more sophisticated and higher technology final product producers such as global multinational companies of FDI investors within the country. Since policymakers are often ill-informed about sectorial and technological dynamics (Kaplinsky, 2013) they would need to develop capabilities that will help domestic capitalist identify particular technologies and the necessary support they need to build capabilities and maximize linkages to FDI.

2.6 Learning and Technological Capability Building in Developing Countries

2.6.1 The Limits of Technology Acquisition as a Learning Strategy

The extent to which domestic firms are engaged in learning and improving their technological capabilities has always been an important feature of developmental states. The two-fold challenge, however, is that it is not easy to construct an adequate understanding of what constitutes learning and the exercise of assessing whether learning is indeed taking place is not a straightforward process. Neoclassical economics has its own toolkit from which it approaches the subject of in-firm learning. Much of the assessment of learning in the neoclassical tradition derives from the way in which technology and its adoption is understood. Technological change, progress and innovation play an important role in neoclassical growth theories (Solow, 1957; Romer, 1990; Grossman and Helpman, 1991). The achievement of learning, however, is

assumed to happen via a straightforward process of capital accumulation by individual firms. Firms themselves are unrealistically understood to be optimizing entities that operate on the same production function and whose primary goal is to maximize profits within set technological and market constraints.

The acquisition of in-firm learning is understood to happen mainly through access to information (closing information gaps) or access to superior technologies that are easily available on global markets and can be imported without limits to transferability. Accordingly, governments in developing countries, acting in accordance with the market-centric ordinances, leave the process of technological accumulation and absorption of technologies to the workings of market. Thus, policies that are designed to promote the transfer of technology go no further than simply to welcome FDI in anticipation that learning will flow automatically and seamlessly through the information embodied in imported equipment or via spill-over effects through the direct engagement of domestic firms with foreign firms.

These unrealistic claims have been challenged by the evolutionary and heterodox literatures, which draw from altogether nuanced toolkits. This thesis relies on the technological capability approach developed by Lall (1992); the evolutionary theory approach developed by Nelson and Winter (1982); structuralist theories from where the idea of learning by doing has its foundations in the 'infant industry argument' of Friedrich List (1856) and; heterodox approaches of developmental state theorists such as Amsden (2001) and Khan (2009) as a better alternative to illuminate and analyse both the processes and challenges associated with learning and learning from failure in a developing country like Ethiopia.

This is because, while FDI is considered one of the crucial drivers of technological change in industrial development, the supposed benefits of technology transfer have, in reality, either not eventuated or have yielded limited results for many developing countries. This is so despite the promises of liberalization and globalisation to firms in developing countries, namely that they can reap substantial benefits from connecting with large and experienced transnational corporations who hold superior technologies. A majority of developing countries have been subjected to the adverse effects of globalisation due to extreme competition, whilst developed countries that produce and export goods with high technological content have enjoyed much progress (Lall, 2006). In attempts to advance their own profit interests, as well as to keep the

superior intellectual property and R&D functions within their home countries, transnational corporations have often restrained firms from developing countries from accessing superior technologies (Lall, 2002; Amsden, 2001; 2009).

Additionally, assumptions about the effectiveness of technologies that have been purchased off-the-shelf and ready-to-use have been found to hold little relevance by evolutionary theory scholars (Nelson and Winter, 1982). Instead, because different firms have different technological learning capabilities (Nelson and Winter, 1982; Lall, 1992; Lee, 2019) and varying distributions of technologies of different vintages (Dosi and Nelson, 2010) the degree to which firms learn, interact and innovate is highly heterogonous. Limitations in technical and managerial know-how within the firm and which cause limited absorptive capacity also make it difficult for domestic firms to incorporate and make use of foreign technologies. These limitations may require further investment and effort on the part of the firm to train its workers, experiment with new and different ways of organizing production, expand its knowledge horizon or attract skilled and experienced workers from foreign firms, all in an attempt to internalize the technology.

2.6.2 Learning-by-doing as Means for Learning in Developing Countries

Learning plays an important role in industrialization and takes various forms which include: learning by using, imitating and adapting; learning by studying and training; learning by experience; learning by doing and learning by trial and error (Khan, 2009). Learning-by-doing is adopted here as the most relevant feature of learning in developing countries. It is described by Oqubay (2015:287) as "the prime means for mastering production among late developers" and accompanies vast difficulties that are associated with copying, emulating and developing technology. The notion of learning can be traced back to Arrow (1996) who argued that productivity growth can be attributed to learning from experience. Common among the Neoclassical, evolutionary and heterodox literatures is the idea that an increase in productivity is typically one of the important measures for gauging whether learning is happening (Bartelsman and Doms, 2000). In neoclassical theory, improvement in learning as it relates to productivity is captured in Human Capital Theory. Fine's (2016) summary of Human Capital as it is understood in Human Capital Theory is that it is the skills that make employees more productive. The theory's proponents (Becker, 1962) argue that an investment into formal education and training (amongst other forms of human capital such as migration, birth control, and medical care) is the

most important form of investment into people. Formal education and training are believed to have positive long run returns for productivity, innovation, skills development, development of technology and economic growth (Becker, 1962; Romer, 1990).

Human capital theory has been criticized in the heterodox literature for its problematic over-emphasis on formal education and training. While formal qualifications remain important, they are, however, not necessarily the most important channel through which the learning that is required for most jobs happens (Fine, 2016). In specific reference to developing countries on the African continent, Khan (2009) argues that the major problem they face is one of not having a large already existing disciplined working class and it cannot be assumed to be built easily over a short period of time. The most important channel towards building that discipline is, however, through a much superior and important process of building organizational capabilities, which are associated with tacit knowledge, and can only be gained through in-firm learning-by-doing where workers with formal skills are actively engaged in different routines and exposed to capital under dynamic experimental conditions (Khan, 2016).

In relation to productivity and the firm, the reductive characterisation of firms as homogenous agents makes it possible for neoclassical economics to aggregate productivity following the assumption of a representative firm when in actual fact this makes very little sense (Hoover, 2010). Furthermore, from a neoclassical perspective the understanding of learning is confined to market-led conceptualizations that draw on notions of productivity, competitiveness, upgrading of skills, etc. From this perspective, learning is centrally attached to the ability of firms to compete globally and this ability is essentially captured by measures such as efficiency and growth in production, obtaining cheaper inputs, rapid uptake in exports, improvements in quality and economies of scale, shorter delivery times from production to market, etc. What usually follows are analyses and a set of recommendations implicitly couched in market-led notions suggesting that various industry imperfections can be resolved by facilitating market mechanisms that allow access to the right markets, technology and skills and the reduction of transaction costs (Takala-Greenish, 2015).[3]

[3] See Takala-Greenish (2015: 129-130) for a critique of analytical frameworks that are founded on market-led notions and the supremacy of the market-mechanism

In the evolutionary literature, on the other hand, firms are seen differently as dynamic and heterogeneous agents that operate on different production functions and vary in size, growth and the technology they possess. The process of acquiring and mastering technology is uncertain, happens in different ways for each firms as guided by its dynamic and changing skills, knowledge, learning effort and investment (Coad, 2009; Nelson and Winter, 1982). From the evolutionary perspective, productivity improvements, profit increases and growth in size is taken to mean that there is learning happening. Stagnation in these measures, on the other hand, is evidence of organizational slack (Coad, 2007). In the absence of more explicit measures of learning, Ahmad's (2016), for example, adopts the evolutionary approach and uses the above measures as indirect and implicit proxies for quantifying whether there is learning happening in Ethiopian manufacturing firms. Evidences of improvements in firm level performances, such as firm survival, growth, and productivity of individual firms were translated to mean there is learning. Any factor, such as access to knowledge, which he found to improve performance, was "assumed" to be a source of learning. Ultimately, evidences of high performance in these measures "imply" high technological capability or absorptive capacity and, therefore, indirectly interpreted to be the outcome of improved learning capabilities.

In the heterodox developmental state literature, the importance of rising productivity is well-recognized where Amsden (1989), for instance, argued that incremental productivity and quality improvements were absolutely important in order for chaebols to move toward global competitiveness. Khan (2015:16) too posits that "…industrial policy can only be successful if the output growth that it can spur in the short to medium term is associated with productivity growth that rapidly leads to a growth in competitiveness, and allows the tariffs and other forms of subsidies to be cut back relatively rapidly. However, if productivity growth is too low and competitiveness does not emerge within a reasonable time frame, the critiques of protection strategies coming from liberal and neoclassical economists are justified".

However, as important as productivity is a measure of learning it is, nonetheless, not without limits. This is especially true, for sectors which may in the present have an inward focus, but are laying the basis for successful future development, growth and export performance, and may not necessarily be performing well in the early stages. A closer look at the learning curve, which

captures the salient features of returns to scale according to a sector or activity's complexity, tells us that productivity is typically low at the early stages of production and during initial attempts at learning, particularly for sectors that exhibit increasing returns to scale (IRS). Indeed, Cimoli and Porcile (2009:690) acknowledge that the "patterns of learning vary across sectors and not all sectors display the same technological opportunities nor generate the same externalities". Sectors with increasing returns need to be treated with slight nuance.

One way to drive this point home is by looking at the idea of manufacturing experience, which is one of the important insights from the developmental state literature and is closely associated with the notion of learning-by-doing (Amsden, 2001; 2008). Manufacturing experience is crucial because one of the important factors that influence mastering of new technologies is previous learning and experience (Metcalfe, 1998). The group of newly industrializing countries (China, India, Indonesia, South Korea, Malaysia, Taiwan and Thailand, Argentina, Brazil, Chile, Mexico, Turkey) that constitute 'the rest' and did successfully manage to catch-up owe much of their catch-up to their exposure to modern factory life, the so-called manufacturing experience, in the pre-war period, whereas those in the 'remainder did not have such exposure. The concept of manufacturing experience informs us that it is absolutely fundamental that a developing country is engaged in and at least retains some manufacturing activities, however limited they are in complexity (Amsden, 2011; 2008). The shape of the increasing returns to scale curve tells us that the accumulation of experience in manufacturing in some sectors, such as advanced industrial sectors, may entail a period where the increasing returns to scale are not yet translated. The likelihood of subsequent success in productive manufacturing to eventuate will depend on firms retaining some level of ability to produce, even if manufacturing appears to be performing poorly and is not yet very productive in the initial learning stages.

On the basis of standard neoclassical theory, the analysis as to whether such firms or a sector are viable should stop at the point where the sector or key firms in the sector are shown, in the terms of the theory, to be failing. From the neoclassical perspective, the logical next best solution would be to descale the sector or corporation's activities to a level of efficiency or to completely shut down and abandon operations because there is little evidence of immediate or short-run returns or gains. This, in effect, when looked at from a structuralist perspective, which inherently

caters for the possibility of learning-by-doing being driven by an indigenous capitalist or managerial class in its analysis, would result in a throwing of the proverbial infant out with the bath water without a proper interrogation as to the reasonable amount of time and resources that would need to be invested before productivity growth and competiveness would begin to reasonably emerge.

The theory's inability to appreciate other sectoral dynamics that are at the heart of the analysis in the heterodox literature, but only emphasize on static measures and quantitative proxies of progress, such as output, exports, productivity, etc. is problematic. What are these other sectoral dynamics that capture the salient features of learning? Important questions and considerations that would first need to be seriously engaged include: the particular magnitude of effort and experimentation required in the sector in order for learning to eventuate; the nature of technical complexity; the length of the time horizon in terms of months or years it takes to acquire tacit knowledge and put new skills into use as well as to acquire technological and organizational capabilities; the skill-biasness of the sector; whether the sector is associated with more pernicious types of rent-seeking; the intensity of global competition; nuances in the necessary incentive structures and; the amount and length of time required for loss-financing (Chang & Cheema, 2002; Hausmann & Rodrik, 2003; Khan, 2000; Rodrik, 2007).

2.6.3 Technological Capability Development

2.6.3.1 Innovation Capabilities

Amsden and Hikino (1994:129) define innovation capabilities as "the skills associated with basic and applied research and related engineering or creating major new products and processes". Schumpeter (1942) had, much earlier, described technological innovation as the vehicle for economic progress while associating its decline with lack of Innovation. For economies that are transitioning from latecomer middle-income to rich economy status the channels or modes of learning and technology capability building interventions consist mainly in interventions and radical innovations such as patents, initiation of international mergers and acquisitions, establishing overseas R&D outposts, forward engineering, develop in-house laboratories or R&D centres and co-development with foreign R&D specialist firms (Lee, 2019). However, the standard innovation indicators that are often applicable to learning in developed countries may

not adequately capture the processes of learning in developing countries (Oyelaran-Oyeyinka & Sampath, 2010; Fagerberg, Srholec and Verspagen, 2010).

While innovation can and does take place in developing countries, it is not the radical and prolific type based on R&D, creation of new technologies and patent registrations observed in developed countries (Pietrobelli and Rabelloti, 2011). This is mostly attributed to the fact that institutions of learning such as universities, institutes of science and technology, public and private research institutes, R&D laboratories in developing country contexts may not sufficiently have the resources or ability to innovate at the same level as that in developed countries. At most they are engaged in the provision of quality standards, testing services, consultancy services, metrology, training and the provision of information and technical equipment and services to firms in the industry (Pietrobelli and Rabellotti, 2011). More relevant to developing countries is a more sequential process of constant and persistent acquisition, technological diffusion, minor modifications and improvements to processes, products and organizational routines, improvements and adaptation (Table 2.1) of modern technologies to their own contexts, industrial dynamics and changing conditions (Fu, Pietrobelli, and Soete, 2011; Fagerberg, Srholec and Verspagen, 2010; Bell and Albu, 1999; Lall and Pietrobelli, 2005).

Kaplinsky (2013:16) suggests that governments should "scale their ambition through a careful and informed calibration of dynamic capabilities and sectoral and technological dynamics over time". While leapfrogging has been a key feature of late-industrialization, the most successful cases of leapfrogging in late-comer countries, especially in medium-to higher-technology sectors, has, however, happened through sequential internalizing of technology as opposed to big Schumpeterian leaps (Lee, 2019). The trajectory of technological capability building has proceeded from initial and basic acquisition of low-level generic engineering and production skills that are applicable to many industries, borrowing foreign technology in the form of licencing agreements, un-packaging and reverse engineering of imported technology. While technological sequencing may generally tend to be smoother, less learning-intensive and less disruptive than the big leap approach, due to the characteristic of it being undertaken with known processes, it can and does manage to gradually bring in complex technology (Hirschman, 2013). The big leap approach on the other hand is, according to Amsden and Hikino (1994) more

consistent with the Schumpeterian technological and organizational breakthroughs of first-movers and their ability to generate radically new products and processes within their technology trajectories.

Table 2.1: Innovation capabilities relevant for developing countries

Diffusion	The process of technological capability building that includes borrowing, copying, imitating and important technology and technical know-how that has already been developed and is in-use in developed countries rather than its initial development from the beginning (Dalum, Johnson and Lundvall, 2010). Technology diffusion in developing countries has happened mainly through foreign direct invest and domestic firms' integration into global value chains (Pietrobelli, 1996).
Minor Modifications	In developing countries this mostly takes the form of un-packaging an reverse engineering of imported modern technology in efforts to capture the properties embedded in them in order to learn how to master them locally (Fu, Pietrobelli and Soete, 2011).
Technological improvements	An important aspect of learning in developing countries that entails upgrades in production processes, technical staff learning how to handle, maintain, repair and recondition machinery and equipment in more efficient ways (Fagerbag, Lundvall and Srholec, 2016).
Adaptation	Something as simple as adapting imported machinery that has been bought or borrowed from foreign firms is not an automatic process. It requires new trainings and educational change (Dalum et al. 2010). Adaptation also requires absorptive capacity which has to do with the ability to identify, assimilate and utilize external technology and technical knowledge (Cohen and Levinthal, 1989). This external knowledge needs to be incorporated into and made suitable for the firms' existing production systems, processes and human resource and capital inputs (Bell and Albu, 1999)

Source: created by author

Owing to the limitations of innovation capabilities in developing countries, looking for evidences of innovation may not give us reliable picture of the learning that is happening in a firm or sector. Other measures, signals and markers, which are less radical, but still constitute a viable learning path in the technological capability building process of latecomer firms in low-income countries such as Ethiopia, may be more relevant. To assess whether learning is happening we would have to look at the unfolding of simple interventions such as imitation, adaptation of technologies to satisfy local conditions, reverse engineering, acquisition of codifiable knowledge from foreign technology providers, technology transfer via importing machinery, non-patentable or minor innovations, licensing agreements for assembly production and joint-venture initiatives. While these measures may appear to be trivial or mediocre by middle-income economy standards, they may in fact prove to be of significant importance and yield substantive progress in terms of learning for firms in low-income contexts (Lee, 2019).

2.6.3.2 Production Capabilities

Amsden and Hikino (1994:129) define production capabilities as "the skills required to operate the facilities once they are established". Avenyo, Tregenna and Kraemer-Mbula (2021) have recently summarized literature on productive capabilities and innovation. Much of the existing literature has been found not to explicitly focus on the difference between learning in already-existing sectors and learning in entirely new Sectors. Khan (2013) and Amsden and Hikino (1994) are amongst the few to point out some importance differences. In already-existing sectors where basic technical capabilities already exist, the understanding is that firms are generally targeting products that use capabilities similar to those that they already have and are, therefore, already engaged in profitable, albeit low-quality, activities. The purpose of learning is to, therefore, primarily enhance existing production capabilities to help to bolster competitive production or develop new capabilities that allow them to move into higher value-added or niche products in a familiar product space. Learning in this category carries the implication of spearheading, which involves learning how to use new technologies and new methods of organizing work, trying out different organisational designs, internal management structures, inventory control systems, quality control systems and organizational practices that allow for existing capabilities to be used better. Even if radically new technologies are to be introduced,

firms have the benefit of workers and managers with formal knowledge in past capabilities who need to engage in the process of learning new methods and unlearning obsolete methods

Firms in already-existing sectors are assumed to be more or less already engaged in exporting. If not, the learning happening at firm-level to better their production capabilities is readying them to engage in exports in the not so distant future. So important are exports in the field, for example, that there has over the years emerged new and influential industrial policy literature that solely converges around learning-by-exporting (Siba and Gebreeyesus, 2014). The main idea is that once firms begin exporting they will, as a direct result, learn from being exposed to both the knowledge and competitiveness demands of international markets and the intense competition learn, and thus, learning by-exporting will be in motion and productivity increase much faster than if they were engaged only in the domestic market. The main policy implication flowing from this insight is a recommendation for increasing trade flows by lowering transaction costs and or allow for greater market liberalization. This can sometimes lead to a reductionism that over-emphasizes the need for 'business friendly' policies that are centered on improving market conditions. Instead, more emphasis needs to be placed on strengthening linkages between FDI and domestic firms because of how much the benefit of exporting is limited to exporters who largely constitute of international firms.

While improvements in productivity, competiveness and exporting in newly created sectors remain important, they may not be the most significant indicators of learning in the immediate period following the establishment of a star-up firm or industry. This was true for some developmental states, and especially for complex manufacturing sectors or activities that exhibit increasing returns to scale. Capability development and learning in newly emerging sectors can, thus, take a different understanding from that of incumbent or new entrants firms in an already-existing sector. The more ambitious process of pioneering entirely new productive sectors implies venturing into new investments, accruing capabilities and setting up operational entities from scratch and engaging in experimentation and trial and error in an altogether new generation of technological capabilities that previously did not exist in the country.

It follows then that the assessment of whether there is any learning in infant industry or startup firm in the early stages may prove to be far more complex since there aren't necessarily any immediate and easy-to-observe indicators such as a fast progression towards global

competitiveness, moving up the quality ladder or moving into higher value-added products. Khan (2013) argues that sometimes competitiveness may take a long time to achieve even with some productivity growth happening as productivity is also increasing in the much more experienced and leader. Seeking to translate indicators such as profitability, growth or productivity as outcomes of learning, as per Coad's (2007) suggestion, might not be relevant or feasible at the early stages of learning since there may be a substantial loss-making period involved, during which technological capabilities are being acquired through the slow, but nonetheless gradual set-up and practice process. Even is South Korea where disciplining mechanisms where strictly enforced "good performance (was) evaluated in terms of production and operations management rather than financial indicators". Amsden and Hikino's (1994) observation of how some of East Asia's "large investments in human resources were not 'efficient' in the sense of being immediately cost-effective" ties with Meisel's (2004) discussion on productivity and its role in growth, which affirms the view that it is not to productivity growth per se to which Asia owes it sustained output growth in the period between the 1960s and the 1980s. Rather, it was due to the massive mobilization of factors of production in the region. Meisel (2004) asserts that "as long as a nation is in the process of economic catch-up, firms can base their competitiveness on the mobilization and co-ordination of factors. In their transition phase towards more intensive growth that follows, the challenge of competition becomes that of increasing productivity, and thus, essentially, that of innovation."

Even for learning in entirely new sectors with, for instance, low-technology production processes such as garments manufacturing, on one hand, and more sophisticated medium and high technology products such as components manufacturing, on the other, the degree of complexity of learning can differ. Initial learning for the entirely new garments industry in Bangladesh involved the Koreans empowering their Bangladesh joint-venture partner through the sending of its workers to be exposed to productive processes and operations in Korea (Khan, 2013). In other instances, many of the initial "failed attempts" of Taiwan and South Korea's new medium-technology industries, for instance, learning "firms had to try more than 1000 prototypes until they finally launched the project" (Lee, 2009:60-61). While learning in both new sectors entails a period of loss-making, the time horizon allowance for learning and resource deployment in the two categories can vary significantly.

2.6.3.3 Project Execution Capabilities

Amsden and Hikino (1994:129) define project execution capability as "the skills required to establish or expand operating and other corporate facilities, including undertaking pre investment feasibility studies, project management, project engineering (basic and detailed), procurement, construction and start-up of operations". Learning takes and follows a much deeper meaning and process when its sequential nature allows firms to first master internal production capabilities and then gradually transition to diversify in technology-unrelated sectors or develop project execution capabilities that can be useful far beyond a firms' internal production and operations. Realized project execution capabilities gives firms the ability to execute investment projects themselves by designing, erecting and expanding manufacturing plants and facilities with in-house technological skills, rather than rely on turnkey delivery by foreign firms operating in oligopolistic technology markets abroad.

When start-up firms in new industries initially set up plants they are faced with 'make or buy' decisions. Such decisions need to be taken in view of considerations such as cost, experience, suitability for context, long-run learning opportunities, and asset creation. While constituting a much riskier and costly path, those firms that generally get involved in the 'make' processes, otherwise known as internalization of technology, stand to benefit from the positive spill-over effects and increasing returns created through this channel of technological acquisition much more than those firms that go down the path of turnkey acquisition. Only a limited amount of learning happens when technology is purchased directly off-the-shelf of already-commercialized technological sub-elements from well-articulated international technology markers. The advantage of internalization, if done successfully, is that when the firm decides to expand or diversify its operation it can saves costs, customize the technology to suit its plant-specific processes, and create potential for the development of in-house technological skills that can be used and shared in the establishment of future projects. Internalization, thus, becomes an asset and actually appreciates in value through a firm's frequent undertaking of projects.

The case of the South Korean group Hyundai demonstrates the gradual development of project execution capabilities very well, with the group first starting out as an automobile repair shop in

the 1940s and gradually progressing to construction, automobile assembly, ship building, automobile engineering, precision machinery, electrical engineering, elevator manufacturing, etc. over the years, mostly using internally developed project execution capabilities (Amsden and Hikino, 1994). On the other hand, Oqubay (2015) argues that the constrained success of Ethiopia in relation the ability of domestic firms developing their own cement equipment and plants (although some cement manufactures have been able to go into simple capabilities such as cement packaging outside of the actual production of cement) has much to do with cement manufactures not taking the opportunity to develop project execution capabilities, but rather taking the easier route of developing their cement plants as turnkey projects via foreign contractors.

The development of project execution capabilities entails important spillover effects that better allow managers and engineers in the firm to subsequently fine-tune production and organizational operations since they have a clearer idea of the characteristics of the plant being developed. The skills acquired in one subsidiary could then be diffused throughout the business group through the process of rotation and coordination of human resources. Amsden and Hikino (1994) point out that it was not uncommon for East Asian firms to set up an initial plant and use it as a flagship training ground or laboratory for human resources once enough production and organizational experience had been gained from it. This was important for the prolific diversification amongst East Asian firms that often happened in both technology-related and unrelated activities. Skills also became shareable with the industry as a whole via the labour market when managers that hold specialized knowledge about project execution individually or collectively exit the incumbent firm to another firm or forms their own ventures. In South Korean firms such as POSCO, for example, managers of the internalization process that were involved the purchase of equipment and technology or erection of a facility itself were later appointed as the operating managers in the same production plant due to the intimate knowledge and familiarity they had with the architecture and capital equipment of that plant. In addition, project execution advantages grow wider and beyond the firms' own internal use as the firm can be a technology leader that possibly even design and sells domestically developed technologies on the domestic market to other firms in related or unrelated industries (Amsden and Hikino, 1994).

Once project execution capabilities are firmly established in developing countries, domestic firms that go on to become involved in the execution of large and complex projects or components of those projects should not simplistically expect to be engaged in a straightforward process that will result in the timely and cost-effective delivery of engineering or industrial projects. This is because project execution rarely follows a neat linear process that is without teething troubles; significant delays; deviations from initial project plans or; derailment in some aspects of mega-projects (Hirschman, 1967). According to Hirschman (1967:15) "industrial projects, particularly those that are not limited to administering "last touches" to a host of imported semi-finished products, run into very considerable technical and managerial difficulties when they are transplanted to different environments".

Hirschman (1967) challenges the conventional way in which project appraisal and evaluation is typically done and finds it problematic and to some extent misleading to, in all contexts, look at progress in terms of the binary measures of success or failure. The conventional methods adopted by policy makers usually involve the adding up of costs and benefits or ranking them on a scale in a way that measures financial or economic impact or result. Under Hirschman's framework of learning a comprehensive audit of financial losses and rates of returns of projects may prove to be limited or less useful in some cases where there are other equally or even more important qualitative measures such as educational and training effects that are associated with learning. In addition, over and above the immediate and expected physical and production accomplishments, there are proceeds from learning which Hirschman calls positive 'side effects ' that have to do with effects on attitudes, values and institutions and social structure. These so-called 'side effects' are beneficial despite, in some cases, being discounted by economists as marginal or insignificant due to intangibility or a difficulty in evaluation.

2.7 State-Business Relations and Policy Learning

2.7.1 Adaptability, Reversing Mistakes and Learning from Failure

Learning-by-doing at firm level is, in turn, intricately tied to learning that takes place within the state from a policy point of view. An inquiry into the emergence of new forms of domestic productive accumulation would never be complete without understanding the complex policy

learning process that happens within the state. Ultimately, to achieve this takes serious efforts in building the state's internal capacity to articulate a relationship with the private sector that would lead to growth enhancing governance capabilities for the enforcement of the very instruments that govern the functioning of industrial policy. The problem, however, is that the viability of implementing industrial policy in the African continent has been questioned due to the apparent lack of effective developmental states (Khan, 2013). Instead, Africa has been characterized as having ineffective type of states that are patrimonial and lack good governance (Easterly and Levine, 1995). According to Chang (2002), this view can be challenged on the basis of the ubiquity of clientelism in Asian developmental states as well as the presence of corruption and unproductive rent-seeking, which Amsden (2001:11) argues were the "scourge" of late industrialization, but were not enough to dissuade them from attempting industrial policy. Developing countries, therefore, need not wait to first construct relevant aspects of developmental states to implement industrial policy because the constriction of significant aspects of developmental state, such as those of East Asia, is not feasible for most developing countries in any case (Khan, 2013).

This renders the neoclassical approach to learning, which can be classified as a "best-practice approach" and often takes development blueprints 'off-shelf' as narrow and unfit to be followed by developing countries. The neoclassical vision of industrial policy has the tendency to assume that industrial policy is basically akin to a recipe that needs to be followed well in order for the dish to come out perfectly. Rather, there are very profound factors that are not so technical, but political in nature that are deeply engrained and hidden in country's political economy that may be constraining the effectiveness of industrial policy. Developing countries are in fact, very fortunate that there is no straightforward or linear process in policymaking or direct yes or no answers to the questions of development. The implication of this is that policymaking can only be learnt via the process of learning-by-doing; otherwise many governments would just simply give up and not attempt industrial policies due to weak capabilities. The supposedly fail-proof method of transplanting policies that worked well somewhere ignores the reality of contextual differences that do not necessarily allow for the transplantation of policy across different settings. After all this is what was wrong with the disastrous Washington Consensus and its unwarranted prescriptions to countries in Sub-Saharan Africa.

This, however, does not mean that firms cannot implement what they have learnt from other jurisdictions. After all, one of the key characteristics of structuralist theory is the recognition that emulation of what worked in other countries is critical (Amsden, 2001). What it does mean, however, is that emulating countries need to strategically identify the dynamism of learning that has happened or is currently under way elsewhere and make proactive efforts to integrate it into their own context. By doing so states can selectively target and draw the kind of learning and tools that are best suitable for them. The heterodox approach to learning-by-doing as it related to policymaking is a more compelling way of understanding the successes and failures of industrial policy due to it being grounded in the fundamental idea that learning is not about adopting fail-proof interventions that will undoubtedly succeed, but is about learning from and correcting failures.

The key to successful industrial policy is the ability to make and take independent and autonomous development decisions. This, for Hirschman, is what differentiates the dynamism of some countries when others seem to get stuck; it is this ability to design and implement policies independently as well as the boldness to experiment by making decisions which it deems developmental yet fraught with risk, uncertainty and susceptible to mistakes. A construction of the developmental state from this perspective is best crystalized by his postulation that:

> ‘‘(W)hat was scarce in traditional societies becomes clear. It was not capital. It was not a middle class. It was not “entrepreneurship” or the right kind of cultural bedrock of striving individualism. It was altogether more original: the capacity to problem solve in a capitalist world, the “ability to make development decision” (347). To Hirschman…what was in short supply was ‘‘the ability to carry out cooperatively decisions and activities for development’’ (Hirschman (1958) cited in Adelman (2014:347).

While much of the neoclassical literature cautions developing countries against taking on industrial development projects that are too complex and far beyond their capabilities, Hirschman (1958; 1967) adopts a different approach that makes a strong case for developing countries to take such projects despite their particular unfitness to do so. This is because of his observation of the important proceeds of learning that firms as well policymakers and project

planners stand to benefit from involvement in such complexity. In many cases such learning has been discounted by economists as marginal due to intangibility or difficulty to evaluate and for policymakers and project planners includes: an infusion of confidence; discovery of a more exciting way of life; attitudinal shifts; a resultant willingness of the decision maker to face uncertainty and difficulty in a more mature manner in new projects and; decision makers learning to take risks in a newly emerging risk-laden project (Hirschman, 1967). As much as the side effects can be positive, they can be negative as well. As Hirschman (1967) argues that a project can spread corruption just as well as it can teach skills, discipline, and achievement motivation; it can increase social tension, exacerbate regional or ethnic jealousies, or lead to considerable disenchantment and frustration because of the exaggerated expectations with which it was launched and of the political and administrative problems it encounters on its way.

Hirschman shows us that a lot of interventions and development projects in developing countries will fail. The more crucial issues, however, is that both the state and the industrial firms learn from those failures and not so much that they fail. His observation of development projects in in the under-developed world led him to the general conclusion that such projects are almost always problem-ridden and to some extent can be likened to Trojan horses or uncertain voyages of discovery that my make shipwreck or land at an incorrect destination. Hirschman (1967:15) argues that "industrial projects, particularly those that are not limited to administering "last touches" to a host of imported semi-finished products, run into very considerable technical and managerial difficulties when they are transplanted to different environments". Hirschman argues that development projects are prone to be subject to what he calls at the 'hiding hand' in the course of development. When guided by the hiding hand, the appearance of projects to planners may appear less difficulty-ridden than they actually are. This he calls the "pseudo-imitation" technique of the hiding hand. Similarly, there is what Hirschman calls the "pseudo comprehensive program" where project planners may be under the illusion that they are in possession of far more insight into the project's difficulties than is as yet available. In providential ways, the hiding hand may be a blessing in disguise since initial miscalculations or sheer ignorance about a project's difficulty may force project planners into an unanticipated creativity leading to them finding solutions that eventually lead to the eventual success of a project.

In the bigger scheme of things then, the greater concern to project planners, far more than the project failures that commonly surface during construction and implementation phase, should be that they can actually respond with agility through political, administrative and technical creativity and problem-solving in order to overcome the initial difficulties presented by initial errors such as under-estimations on the costs or complexity involved to complete and run a project successfully. For, that is where the true measure of learning rests. An important question arises relating to the amount of failure that policymakers can endure or tolerate as a result of poor performance in a project before they can decide to abandon it as failure that cannot be salvaged. What makes such a consideration so important is the amount of time and resources, which are not necessary a luxury for developing countries. The understanding that policy-learning as filled with many challenges gives rise to the appreciation that evidences of delays or some managerial problems due to the fact that both firms and policymakers may be inexperienced and are engaged with trial and error experimentation for a while during the early stages of industrial dynamism is not in itself a reason to shut down projects or firms involved in those projects.

What would, instead, constitute a compelling reason to shut down is evidence that none of the adaptive capacity, that according to Geizen, Bertolini and Salet (2014) is a key feature of learning in mega-projects, is capable of emerging to correct the situation. With the implementation of proper mechanisms for the monitoring, supervision and performance management of projects there can emerge sufficient adaptive capacity in the state. Alternatively, when government's cannot act to overcome complexities as well as improve and apply adaptive capacity it may be easier for policymakers to prematurely pronounce failure upon a project and quickly abandon or terminate it as soon as it exhibits certain forms of failure such as delays, cost-overruns, managerial and other technical difficulties, thus losing out on developmental effects when in fact a project may have been a success had innovative policy solutions been applied.

The fundamental idea behind the idea of "learning-by-doing" is that it is about learning and not so much ensuring fail-proof interventions that will undoubtedly succeed. Hirschman (1967) shows us that a lot of mega project interventions undertaken via trial and error or experimentation in developing countries will be subjected to failure before they become successful. It is the role of the state and industrial firms to take lessons from those failures and

learn to overcome technical and policy challenges if success is to eventuate. The fact that delays or managerial problems emerge and persist for a while due to inexperience is not in itself, according to the developmental state/structuralist perspective, a reason to shut down learning firms. The point of learning-by-doing is the ability to learn from failure and correct those failures, and so what would be a compelling reason to shut down the corporation are clear evidences of no progression in learning and an intention to not learn from emerging failures.

Much more than looking at the outcomes (which in the dominant literature mainly focus on the successes), what constitutes the yardstick to measure the quality of industrial policy is not whether it has been successful per se, but whether mechanisms by which the government is able to analyze the outcomes of the impact of the policies that were implemented and correct them if they need to be corrected can be identified. In so doing, the increasing returns to scale in policy-making and learning become evident. Intuitively, the pervasiveness of uncertainties and inevitability of mistakes in grand and complex projects when undertaken by developing countries demand that development planners act with agility and adequate measures of creativity and innovation in responding to unforeseen crises, technical or political complexities or setbacks that suddenly and unexpected threaten the success or existence of the project. Once a project has been initiated, is under construction, or has reached operational phase, the ability to take swift decisions in reversing errors or redirecting course becomes a requisite for the progress and success to eventuate.

2.7.2 Design and Enforcement of Reciprocal Control Mechanisms

The shallow attachment of pejorative connotations to the terms rents and rent-seeking in the neoclassical economics literature has resulted in both of these terms being perceived as having growth-reducing effects (Kruger, 1974). Policy-induced rents are seen as particularly creating incentives for the state to direct resources away from more useful and socially beneficial ends towards rent-seeking behavior. The terms ‘corruption and rent-seeking’ have been widely used as catch-all phrases in neoclassical theory to justify the superiority of the market over what is seen as a malevolent, redistributive and rent-seeking state that cannot lead the process of economic development. The assumption flowing from this is that industrial operations carried out by the state are bound to fail because of the inherently corrupt nature of the state. However, newer perspectives on rents and rent-seeking (Chang and Cheema, 2002; Khan and Jomo, 2000;

Khan, 2010; Booth and Golooba-Mutebi, 2012) challenge the narrow neoclassical arguments that are against giving rents by providing insights into how certain types of rents, such as learning rents, can be growth-enhancing and that rent-seeking within this context can produce good outcomes. Khan's (2000) typology of rents differentiates between inefficient growth-reducing and productive growth-enhancing learning rents.

The different types of rents are according to Ngo (2013): monopoly rents (generally regarded as inefficient and growth-retarding); natural resource rents (offering counter incentives which can be efficient in precluding the tragedy of the commons scenarios); transfer-based rents (transfer of assets or rights through the political system that may either be positive or negative depending on the context); Schumpeterian rents (incentivising and accruing to innovation); learning rents (policies designed to protect or boost the infant industry); management rents (incentivising economic efficiency where management is good, but also subject to failure). For industrial policy, the most important of these rents are learning rents and evaluating, whether a specific instance of 'rents' or 'rent seeking' is developmentally good or bad requires a nuanced analysis of the political economy of its contexts. Khan (2000) demonstrates the difference between good and bad rent-seeking, and shows how developmental states too can be corrupt. In de Waal's (2018:3) notes on an interview he had with Meles, it is clear from the illustrative examples that Meles makes, that he was aware of the distinction between good and bad forms of rent-seeking that can ensue at any given time. For Meles Zenawi, what sets developmental states such as South Korea and Taiwan apart from their less developmental counterparts such as India is not that there isn't corruption, but that even though officials in the former states take bribes, they have internalized the development ethos whereby they did not compromise for instance on certain fundamentals such as quality in either manufacturing or construction.

Khan (2013) argues that despite receiving rents from the government, the difficulties associated with learning may cause managers of firms not to be too concerned about learning. In such a case, managers have an incentive to engage in 'satisficing' behavior that puts low or no effort in learning and instead spend most of their effort protecting against the loss of the subsidy they receive from the government. Without credible compulsions and pressures in place from the government agencies that finance them to learn, firms may very well get away with not learning. Sometime management and workers may be so good at hiding the failure to grow the infant

industry and become competitive over many years when in fact failure could have been detected much earlier and financing abandoned. The key question then is how learning-by-doing should be governed to ensure successful learning outcomes?

One key element in the literature that is recognized as one of the core foundations of the developmental state is the nature of the relationship between the state and the private sector. More specifically, the main idea emerging from Amdsen's (2001) observation of this relationship in South Korea and other East Asian developmental states is that reciprocal control mechanisms were the linchpin of industrial policy. For Amsden (2001), what mainly characterizes the success of East Asian developmental states was the ability of the state to impose discipline onto companies that received support through a variety of policy instruments, including export subsidies, tariff and non-tariff barriers, waivers on import duties, and a host of other industrial policy incentives. To facilitate learning the state delivers learning rents such as industry specific infrastructure, access to adequate and low cost investment and working capital; subsidizing the cost of education and training; subsidizing research and development; helping capitalists to access scarce land and natural resources; negotiating preferential trade agreements.

With the reciprocal control mechanism, firms never did receive anything for free, but in return they had to make strong commitments to either or in combination, and according to the desired outcomes, invest in a range of new production techniques, purchase better equipment, set up training programmes, improve their exporting capabilities etc. that would in turn ensure that learning and catching up to more advanced firms in the forerunners eventuates (Amdsen, 2001). The state had an important role to play in the monitoring of firms to ensure that managers and workers put in the required amount of effort. The Ministry of Trade and Industry (MITI) in the case of Japan, for example, was able to crucially focus on "coordinating intra-industrial change, inter-sectoral linkages, inter-company linkages, and the private–public space in a way that allowed growth to occur in a holistic targeted manner" (Mazzucato, 2014:38). These 'street level' type developmental states were present in other East Asian developmental states where dedicated task forces were assigned to industries, sub-sectors, specific projects and factories down to the level of the factory floor to perform a 'nudging' role on a continuous basis (Wade, 1990; 1992). These task forces were actively monitoring information and feeding back the knowledge they gathered from technological and market developments in the frontier to firms as

well as from firms to the government agencies for the purpose of incentivizing, monitoring, and disciplining firms that were supported by the government.

The act of coercing firms to learn and invest in technological capabilities is by no means a simple affair. The difficulty is evidenced by "the relative paucity of successful infant industry programmes" which then "demonstrates the difficulty of getting the governance capabilities right for ensuring successful outcomes in these public financing strategies." Khan (2013:10). One of the key differences between the relative success of North East Asian NICs such as Korea and Taiwan and the lesser successful case of South East Asian countries such as Indonesia, Philippines and Malaysia had much to do with the greater ability of the developmental states in North East Asia to successfully design and impose RCMs on firms receiving state support. Governments in the less successful states did not possess the ability to have governance capabilities ensure that the compulsions placed on firms are adequate and well-regulated for them to put in the required effort to ensure continuous learning. Through here study of East Asian industrial policy Amsden (2001) crystalized the idea that well-designed and well-enforced RCMs can be seen as a proxy for successful state intervention.

While East Asia typifies development success, Latin American countries like Brazil appeared to be symbol of a lax approach to industrialization. For many observers, it seemed to be that Latin America's broader focus almost entirely on import-substitution industrialization lacked the kind of dynamism observable in East Asia. Through an exploration of the way in which the Brazilian state related to the private sector Amsden (2001) uncovered how, for instance, the main institution of Brazilian Industrial policymaking, the Brazilian Development Bank BNDES (Banco Nacional de Desenvolvimento Economico e Social), was a key instrument for the application of RCMs. The Bank, which allowed industrialists to access long-term finance at reasonably acceptable rates – an essential element for the development of a manufacturing sector - developed advanced sectoral policy instruments that were embodied in lending contracts with firms and was also able to use these instruments sharply in encouraging and promoting learning. The contracts, which were tailor-made for each sector or each firm receiving loans, articulated very detailed performance standards and sanctions if those requirements were not met. Amsden's (2001) insightful discovery was that although Brazil was less export-dynamic than South Korea,

this lack of dynamism had more to do with a drive for production for domestic consumption, with some export dynamism forming in a number of sectors, unlike the case of India where, for example, there was a complete reluctance on the part of capitalists to engage in export activities.

Generally, industrial policy literature (Wade, 1990; Amsden, 2011; Khan, 2013) highlights that there are many approaches to RCMs and that they need to be country-specific or even sector specific within a political context and cannot simply be copied from more successful countries. Three broad distinctions of RCMs have emerged based on observations from the literature: 1) input-based RCMs; 2) output-based RCMs and Market-based RCMs. Input-based RCMs come, for example, in the form of techno-standards or local content requirements and are implemented by the state mainly as a means to nudge and compel firms to invest in staff training, enhance the expertise of suppliers, and build their technological capabilities, upgrade their production processes etc. This kind of RCM-management style is most appropriate when performance in the future is forecasted to be dependent on the implementation on firms building superior organisational and technological capabilities. Firms that are funded under this kind of arrangement are then rewarded or discipline in accordance to whether they have satisfied the conditions of the required learning. Elements of the approach can be found in the Brazilian BNDES approach to financing learning where firms being funded had to comply with certain requirements even before receiving the loans. On the other hand output-based RCMs can be most useful when the reward is given ex-post upon certain deliverables such as export targets or delivery of projects having been met. Khan (2015) makes reference to this kind of RCM management-style in relation to the joint venture agreement between Suzuki and Maruti in India where Suziki was given the promise of capturing the Indian market if it helped to developed domestic suppliers. Market-based RCMs operate through market incentives such as an intensification of competition being unleashed on domestic firms with the purpose of getting them to improve their quality or pricing, as has been common amongst East Asian developmental states.

In the above section, we discussed how some conventional quantitative proxies may not necessarily the best way to judge whether a government is faced a dynamic sector in the making or a lax sector which is squandering government subsidies without any prospective of being productive. For firms in the first category, the appearance of poor performance is no justification

for an unequivocal halting of industrial policy support to firms or sectors. When this approach was taken in developmental states, it was not that the state had a high tolerance for inefficient firms or chaebol, but it had the understanding that dynamism takes time to achieve. Since complex industry firms in developing countries require a lot of experimentation, research and development, trial and error, investment into science and engineering learning is expected to come at a high cost that entails loss-making for a period of time; a long-time horizon allowance for learning; and a reasonable deployment of resources from other productive activities. This lengthy learning period should be accompanied by loss-financing, which of course must be matched with real and practical deliverables (Khan, 2013). With this understanding in mind, there may be room for support to be prolonged further with a tightening of conditionalities and monitoring in place in, with the prospect for learning to improve over time. Insights from the economic school of the developmental state point to the reality that what matters the most, especially at the stage of infancy, is the careful targeting of protection and support that is tied the state's ability to monitor capability building. Khan (2000) argues that a reasonably sufficient time horizon of protection is an important factor for ensuring desirable learning outcomes. A time horizon that is either too short or too long can jeopardize the intended purpose of learning. The state should, therefore, be careful not to remove rents for learning too quickly before firms have been given a chance to put in the required investment and efforts into the risky and lengthy exercise of learning that would allow firms to building technological capabilities. At the same time, Khan (2000) cautions against directing rents to firms for an extended period of time, especially if it is not attached to credible threats of sanctions or removal, lest they become monopoly rents that protect firms at the expense of customers.

In the other case of firms presenting evidences of being lax, the appropriate approach would be for the state to take for more radical measure, government support would need to be withdrawn immediately and/or directed elsewhere. It follows then that during the early stages of infant industry promotion evidences of weak performance in some of the typical measures, more especially for complex industrial sectors, shouldn't always necessarily be seen an absolute benchmark of progress nor should be an indication that no learning is happening. The only sure way to know the answer to the question of whether learning is taking place is to take a deep dive into a granular understanding of the way in which the state-private sector relationship is structured. The important question for countries that have embarked on an industrialization path

is how to create a combination of protection by the state and a level of compulsion for producers to encourage them to learn as quickly as possible in order for them to catch-up (Khan, 2013; Amsden, 2001).

In sum, the function of good industrial policy is to manage those rents given to firms by the state. Appropriate institutions and conditions need to exist such that appropriate rents and management systems can ensure technological progress and catch-up (Khan, 2009). However, there are many challenges and uninsurable risks in industrial policy. An effective rent management system is one that creates the incentives and pressure for technical learning and upgrading. If industrial policy support is not accompanied by efforts to learn in new industrial activities, this may lead to a situation where developing countries only reinforce existing advantages in simple, low-tech activities where they possess comparative advantages and never move to high-tech activities (Chang, 2013). The effective implementation of RCMs depends not only on the industry context and stage of industry dynamism, but also on the existing state-capitalist relations.

2.7.3 State-Capitalist Relations: Embedded Autonomy

One of the key features of a developmental state is the ability to generate a high quality and high calibre administrative apparatus that is able to steer effectively and adjust industrial policy interventions. Importantly, one that is able to monitor and discipline the behaviour of capital rather than simply creating favourable conditions through incentives and subsidies. A reading of whether there is a serious attempt to build state capacity by the state can be located by zooming in on the way in which policies are implemented. In other words, the key implementing yardstick is the state's ability to discipline capitalist and persuading or compelling them to move in the direction that the state has identified as developmental.

Generally, any endeavour to understand the workings of a political economy is a very humbling exercise. It is easy to think about RCMs from a technicist point of view that sees the state as an all-powerful organisation with the ability to enforce compulsions and performance standards on firms. However, an understanding of the political economy context is also important because particular configurations of state-capitalist relations can be a hindrance to learning even in the presence of well-designed RCMs. Different political and economic interests of different capitalist classes are at play in the process of industrial policy negotiation (Fine, 2011; 2013). All

of these different classes seek to influence the decisions about rent allocation and the direction of industrial policy and the state needs to play a big mediating role (Khan; 1995; Kim, 1997). The state, itself determined by the economic, political and ideological interests it represents, is integrally connected to the market and so, an understanding of the productive synergies between the two is of crucial importance.

One of the key insights arising from the developmental state literature is that what makes successful developmental states is not just about how well policies are designed, but about the kind of relationships that exists between the public and private sector and their articulation; what some of the literature refers to as state-business relationships (Buur, Tembe and Baloi, 2012; Chibber, 1999, 2003; Maxfield and Schneider, 1997). However, going back to much of the earlier developmental state literature, one finds that it had a state-centric conceptualisation of the relationship between state and society. In its analysis, the institutional characteristics of the state and the strength of its bureaucratic role, in a Weberian sense, take precedence over the political relationship that exists between state and society. This conception of the state is particularly derived from the political school of developmental state theory and "is concerned with the nature of the state itself and whether it has the potential in general, and independence in particular, to adopt the necessary developmental policies irrespective of what these might be. Here the emphasis is placed upon the necessity for the developmental state to be free of capture by particular interests and so to be able to implement appropriate policies". Weber's ideals of governance influence the architects of the developmental state theory. The argument of rational-legal bureaucratic rule was used to counter the neoliberal view of the state as an arena of politicians and civil servants maximizing their self-interest in the context of rent-seeking interest groups (Evans, 1995; 2010). The importance of the state to exercise its autonomy and the ability to advance interest and practices that prevail over those of the market is of utter importance for the state, especially in instances where the developmentalism of the state is threatened.

This view has, however, come under a lot of criticism from scholars such as Fine (2005; 2006) for its largely unreflective view on bureaucratic agencies which it sees as technically competent, united in purpose, and supporting national goals, because bureaucrats shared a corporate logic to pursue national interests and their meritocratic appointment and high social status prevented capture by rent-seeking groups. It is against this backdrop that the important notion of embedded

autonomy, which was developed by Peter Evans (1995), arises and points out that for a developmental state to succeed, the state and private sector need to be embedded to a certain extent. In order for them to work together, the state needs to understand the private sector and its interests, but at the same time it must maintain a degree of autonomy from the private sector so as not to get captured by capitalist who seek to elicit unproductive rents from the state.

The collaborative state-capital relations perspective avoids the heavy-handed reliance on the state-centric analysis that the developmental state framework is so often criticized for. Chibber (1999; 2003) is one of the key scholars to break open the political economy relations between the state and business in Asia by making an interesting contrast between the experiences of North East Asia and South East Asia. Chibber (2003), by outlining the differences in the state's relation to the capitalist class in South Korea and India shows us just how much antagonistic relations between the two can hinder a developmental state's ambitions. More specifically, his analysis positions the success South Korea's industrial policy in relation to the less successful case of India. With regards to South Korea, Chibber (1999) raised some serious doubts about the then established consensus which argued that the factor that set South Korea apart from its counterpart states was the unique and unquestioned power of the state to exert considerable power and dominance, thus overriding the narrow proclivities of the capitalist class.

Instead, Chibber's (1999) attributes much of the success in the developmental state to the capitalist class' own rare enthusiasm as an alliance partner of the state. This narrative somewhat challenges other development theorists who somewhat overstate the limits of the scope of power of states to discipline local firms in their statist-centric view of a state that is capable of securing a general dominance over the business community and its countervailing powers. Similarities to Meisel (2004), writing on France, has emphasized that in the French developmental state the government played the role of a governance focal monopoly and had the ability to influence the behaviour of private sector actors by sending them very clear and reliable signals.

India on the other hand is characterized by a very dense network of intermediary power holders that are able to capture rents and block the allocation of resources to priority sectors (Khan, 2000). Despite the fact that India had the required ingredients for a great leap, its case shows the limits of the state to impose its own agenda on its capitalist class due to the orientation of the capitalist class, which had its own preferences and interests. Secondly, and more insisted on by

Chibber (1999), the large domestic market in India allowed it to follow a low-road ISI route and refuse government discipline at a time when the Indian government was trying to impose the same kinds of discipline that existed in other countries in promotion of the developmental state. Despite the attempts of Indian bureaucrats to use similar incentives and policy measures as their East Asian counterparts in South Korea did, they were confronted by a well-organized offensive launched by domestic capitalists. Indian capitalists were not tolerating of a state with wide ranging regulatory and interventionist powers, and organized effectively against it so that the 'shared project' between the two went only far enough as subsidization was concerned, but not in a disciplinary industrial policy. They went on something that is far more harmful than a workers strike for development, namely an investment strike and the government gave in and gave support without trying to impose RCMs.

2.8 The Development of a Dynamic and Productive Indigenous Capitalist Class in Africa

2.8.1 Scarcity and non-vitality of Africa's Indigenous Capitalists

The growing share of medium and high-technology activities in both African manufacturing value-added and manufacturing exports is important because technology-intensive manufacturing sectors grow faster, have greater learning prospects, and have more spillover effects on the rest of the economy (Kaldor, 1967). Furthermore, they generate higher value added and impose higher entry barriers. In contrast, simple sectors such as resource-based and low-technology manufacturing generate lower and less-sustainable margins as competition is much tougher. Despite the recent progress made, the shares of medium and high-technology activities in both Africa's manufacturing value-added and manufacturing exports are still low relative to those of Asia and Latin America. A comparison of the manufacturing sectors of a number of African countries such as Ghana, Kenya, Tanzania and Zambia with other fast-growing low-income countries in other parts of the world in the period between 1975 and 2005, fast-growing low-income countries in other regions had managed to diversify their manufacturing base and their level of product sophistication far more impressively (Page, 2012). By contrast, Africa's manufacturing base became characterized by less sectorial diversity and at the same time was exiting high-sophistication activities and moving down to low-sophistication production.

This trend is associated with a form of deindustrialization is particularly true for countries such as the Ivory Coast and Kenya, whose total percentage of capital goods production was above 10%, but today has been eroded quite significantly. Foreign direct investment, too, has largely been directed towards activities that are perceived as Africa's current comparative advantage (e.g. labour-intensive or natural resource intensive), although an increasing share of FDI is flowing towards the services sector (Reinert, 2009; UNCTAD, 2014). The paradox, therefore, in African manufacturing is that Africa is becoming competitive producers and exporters of low-sophistication, labour-intensive goods, and a provider of services, but there remains no structural change.

The expectation of most sub-Saharan African countries, since independence, was that production and ultimately exports would shift from food processing and textile and clothing manufacture towards machinery and transport equipment. However, this expectation has not yet been met. Instead, Africa's medium and high-technology manufacturing activities are highly concentrated in the chemical industry. (UNCTAD, 2014). The composition of exports is still dominated by goods associated with this early-industrialization-type of manufacturing, rather than 'heavy' manufacturers from the capital goods sector. In terms of higher-value activities, the only country that has a significant manufacturing capacity in the machinery and transport equipment manufacturing sector that accounts for more than 10 per cent of total manufacturing value added is South Africa (Lawrence (2005).

The other main historical challenge and failure, which is closely tied to this abovementioned failure, is that in many parts of Africa there is a lack of a domestic capitalist class in productive activities (Lawrence, 2005). Concerning the distribution and identity of capitalists "the striking characteristic of many African countries is not just that the number of black African capitalists is small, but the potential group is still very small" (Khan, 2009:101). The challenge for many African countries, therefore, is not just about raising the technological capabilities of capitalists or upgrading their operations into the standard of global competitiveness, but more fundamentally and altogether, creating the capitalist class as well (Khan, 2009). "This suggests that the policy in Africa should be looking at more robust financing instruments like development banks with the remit of nurturing and creating a small capitalist class" (Khan, 2009:108-109).

There is also no broader middle class with a capital base to participate in the productive sector, although this is slowly emerging in places such as Ethiopia (Bach and Nallet, 2018). Khan (2009:101) argues that "the primitive accumulation that has happened in many Asian countries and which produced a broad base of potential capitalists appears not to have progressed quite far in most African countries". A closer inspection of African capital transformation traces the general weakness of an African capitalist class in so far as technological capabilities are concerned, back to its suppression during the colonial period (Mkandawire, 2001; Whiflield, Buur, Therkildsen and Kjaer**,** 2013). At the dawn of independence domestic forces with entrepreneurial aspirations were starting on a back foot since they did not have sizable capital, organizational resources and entrepreneurial skills or something important which Amsden (2001) has termed manufacturing experience.

The 'rest' in East Asia owe much of their success to this prior manufacturing experience and exposure to modern factory life in the pre-war period, which they could subsequently build on (Amsden, 2001). By the end of the 2000s, many African countries were still stuck in similar positions that they were in the early post-independence years with respect to the emergence of indigenous capitalists classes. Black African entrepreneurs are still not poised to take advantage of opportunities in productive sectors and are, thus, pushed into economic activities with low barriers to entry and low risk, such as wholesale and retail trade, hotels/tourism, transport and real estate, or economic activities geared towards the domestic market, such as telecommunications and banking (Whitfield and Gray, 2015). The relations that exist between the ruling coalition and domestic capital are ambiguous and largely informal, and exchanges of money and rents are of increasing importance in the relationship (Therkildsen and France, 2016).

The urgency behind the formation of an indigenous capitalist class in twenty-first century Africa stems from the recognition that foreign capital is an imperfect substitute for capitalists of indigenous variety (Norman, 2013). In East Asian NICs foreign investment may have raised productivity and quality in firms they acquired, but it was not usually a catalyst for industrial diversification, but typically arrived on the scene after some industries, including those that later belonged to the indigenous private sector, had already been started by the state (Amsden, 2001:69). Whitfield et al. (2015:19) are of the view that "while industrial policy can be

successfully implemented with foreign capitalists, economic transformation requires that technological capabilities of domestic capitalists are nurtured and increased". Kennedy (1988) strongly believed that only powerful and capable local interests, public as well as private, possess a degree of permanent, all-profound commitment to national need sufficient to generate the momentum required for a successful onslaught against the condition of dependent, distorted and restricted development.

The imperative is also linked to the need to control input supply chains domestically, especially with the problem of foreign transnational corporations and OEMs being generally uninterested in developing local suppliers (Amsden, 2001). FDI, of course, is in the business of maximization of profits, and guilty of dereliction in facilitating learning in their host countries, which makes the skepticism of the possibilities of industrialization through the dominance of foreign capital quite rational. After all, there was nothing more complex an attempt to develop indigenous suppliers of industrial machinery and equipment in post-colonial Africa, rather than using well-established and reliable suppliers of machinery from their own countries of origin. In some cases low transportation costs and no tariffs made it easier to import capital goods than to try and develop this local capacity. The way in which policies were designed turned out to be a shopping list for investors do manufacturing in low-hanging fruit consumption-related import-substituting sector whilst providing them with subsidies while there were very limited conditions and compulsions to create linkages attached or leveraging that investment to develop the emergence of a domestic industrialist class.

The organized or formal private sector in most African countries is sparse, poorly organized and heavily dominated by ethnic minorities of relatively recent vintage (Norman, 2013; Therkildsen and France, 2016). The lack of political or ethnic legitimacy of these minorities introduces political dynamics that affects the political settlements of African countries in ways that take their own path dependent trajectories (Buur, Therkildsen, Hansen and Kjaer, 2013). In most other cases, the absence of a local capitalist class has paved a way for an alliance between foreign capitalists and the state or even worse the emergence of a non-developmental bureaucratic bourgeoisie of 'importers'. This is compounded by the failures or weaknesses in the institutional and political capacities of the state to discipline firms and managers receiving rents to accelerate technological learning and development (Gray and Whitfield, 2015).

Propping up a domestic industrialist might also address the challenge of Africa's generally weak performance in import substitution industrialization when compared to other developing country regions. Therefore, a strong role for the state needs to be considered as essential for successful growth in the future, both as substitute for a non-existent domestic capitalist class, and as planner and director of manufacturing industrialization (Lawrence, 2005). A proper understanding of the local capitalist dynamic is important to our analysis of the developmental state paradigm because it is a means to understanding the merits of developments in Ethiopian industrialization. The question of the possibility of a developmental state on the African continent hangs on the vitality of its indigenous industrialist class and the nature of its relations with the state.

2.8.2 The Problem of Rentier Indigenous Capitalists

One of the conditions for successful industrial policy is the existence of a capitalist class that is able to push the government to implement policies that defend its own progressive interests that are also mutually aligned to the developmental agenda of the state (Whiflield, Buur, Therkildsen and Kjaer**,** 2013). The absence of such a class would mean that the political momentum to supporting a state's industrial policy fails. Alternatively, should this class manage to emerge, but face direct political opposition from other groups who successfully challenge the very interests of the state to broaden the development a local industrialist base, then all the beautiful ideas on how industrial policy should work to promote this class is likely to vanish up in smoke. While African capitalists have generally been victims of neglect by African leaders, the development of capitalists with a disposition for productive accumulation can be severely constrained by incumbent entrepreneurs who seek to protect their narrow interests by lobbying the government in pursuit of their objectives. This kind of capitalist belongs to a category of capitalists that, although sometimes holding vast resources, often lacks faith in their own countries as investment sites and tended to expatriate their capital abroad (Mkandawire, 2010).

This was exactly the case in Zimbabwe, for example, where "…the post-independence government introduced some changes in the foreign exchange allocation mechanisms, aimed at promoting what was termed as the emergent business persons (basically indigenous entrepreneurs), in line with the new government's objectives of creating opportunities for Black Zimbabweans who had been discriminated against by the previous government. Unfortunately, the emergent business persons who received import licenses remained merchants in the import

business, aiming at benefiting from foreign exchange scarcity rent without using the profits to diversify and engage in productive economic activities. Some actually sold the import licenses to larger companies at higher profits, in contravention of the regulations and laws of the country. These were a class of "brief case" business person, most of whom are engaged in conspicuous consumption, only to become bankrupt after abolishing of foreign currency rationing" (Zwizwai, Kambudzi and Mauwa, 2004: 232-233).

A similar situation has emerged in South Africa's Black Economic Empowerment (BEE) policy, which was formally introduced in the early 2000s (although in conception and practice dates back to the early 1990s) as a tool to empower black people in a manner that is both equitable and sustainable across all sectors. The end goal was to enable black ownership and management in productive assets (Shava, 2016). BEE policy has instead engendered new and deep forms of inequality between black people by aiding the creation and enrichment of a small rentier-type capitalist class of businessmen that are either junior partners in white corporations; engaged in many forms of parasitic business practices in the finance sector; striking mega-deals in the extractives/mining sectors or; is well-connected enough to be able to manipulate procurement-linked systems. This capitalist class remains economically weak and politically dependent on the governing party, the African National Congress (ANC). Ultimately, there has been limited progress in empowering a productive black capitalist class in the manufacturing sector in South Africa (Bowman, 2009; Holdt, 2019; Shava, 2016; Southhall, 2007; and Tangri and Southall, 2008). In many ways the situation is reminiscent of the backward entrepreneurship that oriented towards trade and lacked the capacity to organize capitalist production that was prevalent in Nigeria at a time when Kenya had a vibrant domestic capitalist class (Leys, 1996).

2.8.3 The Tendency of Political Elites to Align with Foreign Capital and Neglect Domestic Capital

Apart from having its own set of weaknesses, characterized mostly by low technological capabilities, the state-business relations between domestic capitalists and the state were strained by a number of complexities, which resulted in half-hearted support for domestic capital from the state (Whitfield and Gray, 2015; Mkandawire, 2001). It has not been uncommon for ruling elites in SSA to rely on foreign capital, for reasons related to their own political survival. This is particularly the case where there is a political incentive in suppressing the promotion of an

independent local capitalist class that might become too powerful and threaten the ruling coalition's rule.

Ruling elites may also neglect such a class, and instead encourage foreign direct investment, if they feel that they are not dependent on them for their political survival or financing. One way to ensure political survival has been through political elites exercising direct control over the processes of accumulation inside the ruling coalition so that they are not politically undermined by independent capitalists outside of this coalition (Buur, Therkildsen, Hansen and Kjaer, 2013). This may explain why even when privatization reforms were being embarked on by most African governments, the economic benefits were spread among the same groups within the ruling coalition. The achievement of a new generation of domestic capitalists emerging became deflated by a new political problem of primitive accumulation still largely occurring firmly within the ruling coalition and based on political connections that are being used to access privatized assets and secure state contracts (Gray and Whitfield, 2015).

As political elites became suspicious of the future motives of the indigenous capitalist class, namely that the latter might become emboldened and vigorous and, therefore, become a threat to their continued political hegemony, they turned to supporting foreign capital or capital or minority groups whom they knew could be easily manipulated (Kennedy, 1988). In Uganda, for instance, under the first Obote regime, "the bureaucratic bourgeoisie was quite prepared not only to tolerate, but to openly forge an alliance with certain factions of those very foreign interests against whom some of its ideological pronouncements had previously been directed and at the same time that it was proclaiming the necessity of socialist planning and national economic autarchy" (Mkandawire, 2001:71-72).

With African state leadership having vested interests in keeping indigenous capital perpetually weak, whether economically or political, they lost grip of the importance of constraining foreign capital, "but merely embraced privatization and the attraction of foreign capital as centerpieces of their policy initiatives" (Mkandawire, 2001:296). In some cases, such as in the event of a small domestic capitalist class or one that has weak entrepreneurial and technological capabilities, it make sense to rely on and prioritize foreign capital as a source of investment, technological capability building and access to international markets (Buur, Therkildsen, Hansen and Kjaer, 2013). The legitimacy of foreign capital in such cases has been made obvious by how

it becomes a means to access not just technology and capital, but also the crucial tacit knowledge and managerial experience that comes with large-scale and sophisticated technology in agro-processing and manufacturing (Gray and Whitfield, 2015).

With the aversion towards domestic capital, however, the attention and focus of political and bureaucratic elites shifted to a narrow watchfulness on economic growth, and consequently good growth indicators became their main source of legitimacy. International organizations such as the IMF, and the need to be in seen good light by them became the priority at the expense of domestic constituencies, including domestic capital. More and more, post-independence African states tended to have a distorted or prejudiced view of domestic capitalists, but paid more attention to the attraction of foreign capital (Mkandawire, 20). Apart from the issues of ownership (Amsden, 2001), the other problem with foreign capital is that they sometimes neglect developing local skills and managerial talent.

A number of cases reveal just how an understanding of the political economy is a useful instrument to understand the complex relations between the state and private sector and the stunted linkage formation that can arise out of these scenarios. One such case is the example of Guinea, which has one of the largest bauxite production factories in the world that was initially built and continuously managed by the French for a long time. Over time the ownership of the factory has changed hands, including acquisitions by the Russians and the Indians. It, however, persistently symbolizes the failure of industrialization and the inability to increase the extent of local transformation and integrate the production processes within Guinea. In addition, the staff in the factory was for a long time Guinean only at very low levels and the management and engineering professions are mostly filled up by foreigners. At no point have there been government-imposed compulsions to try and grow a domestic capitalist class, let alone coerce the foreign capital to develop local skills and create an knowledge base to acquire know-how (Campbell, 1991).

Tanzania serves as another instructive example of the neglect of domestic capital (Hazel Gray, 2012; Lawrence, 2015). There, there has been clear resistance to the development of industrialists who are not seen as a legitimate group to be promoted. According to Gray (2013:189) “while private investment was seen as necessary for industrial development, open political relations between the state and the Asian–Tanzanian private sector became increasingly

difficult over the period. From the end of the 1960s, calls for nationalizations by the Party grew and open hostility by some members of Parliament towards domestic private sector industrialists, often framed in overtly anti-Asian language, became more common. Nyerere was frank about the fact that many of the Ujamaa policies were designed to redress racial imbalance in economic power. This meant that while the private sector continued to play a role in industry, its existence was often overlooked in development plans in order to avoid any obvious commitment to the existing private sector that could alienate the Party's main political base. Given these political constraints on attempting to develop private sector industry, the main focus of formal industrial policy was on the state-owned industrial parastatals". This problem is not unique to Tanzania. Upheavals against foreign investment in parts of Africa are reminiscent of the story of Tanzania's failure to industrialize due to this political impossibility to support South Asian industrialists in the context of the industrialization push of the 1960s. This is despite the fact that Tanzania had all it took to become an African dragon much more than other African countries such as Mauritius at that time.

Evidence on Tanzania (Therkildsen and Bourgouin 2012) shows that Asian capitalists have historically been doing better than Black capitalists, even though they have remained politically weak and suffer suspicion based on the prior economic nationalism of the country. The extensive growth of a domestic, but more specifically black domestic entrepreneurial class risks having more legitimacy as threat to the CCM, which could explain the ruling coalition's continuous discouragement of them. Strong continuities of the Nyerere era are reproduced with the undermining of the domestic entrepreneurial class, rather than it being supported. Capacity developing activates are at a minimum, and despite impressive growth in GDP, the productive sector is stagnant. This group not only has limited influence over government policy, but finds it difficult to compete with foreign investors who are at a better advantage in terms of capabilities and access to export markets (Therkildsen and Bourgouin 2012). Therkildsen and Bourgouin (2012) believe, however, that the growing power and influence of the Tanzanian domestic entrepreneurial class may in the future consist of a possible route to power, resulting in new avenues to wealth accumulation".

In places such as Nigeria, the deaccelerated support to domestic capital was incentivized by something different. There, the surge in oil revenues and the consequent turn to the aggressive

exploration of oil caused a shift from what had begun as nurture capitalism – the government proactively created policies which were intended to assist and stimulate indigenous enterprise in more special ways parallel to foreign investment- shifted towards pirate capitalism, meaning that less significant efforts were placed on real productive projects and activities as an engine of growth (Schatz, 1984).

2.8.4 The Kenya Debate and the Re-ignition of Hope for the Development of Domestic Capital in Sub-Saharan Africa

Scholarly debates on the existence and viability of capitalism in post-colonial Africa have been tightly contested over the last few decades. On the one end of the spectrum are those who deny the manifestations of capitalism in Africa based on the argument that the disarticulated nature of class formation in Africa has prevented the emergence of a pure capitalist class that can exploit Africans sufficiently to unleash the productive forces of capitalism (Hyden, 1980, 1986; Cox and Negi, 2010). In one instance, neoclassical economists generally tend to denigrate indigenous capital as a chronically weak sector for cultural reasons such as 'bad culture' (Chang, 2007). The literature's cynicism extends to linking the perceived failure to propel productivity increases to issue of cultural deficiency or disposition in the same way that Japan had been criticized at the beginning of the 20th Century (Chang, 2007). Chang challenges these blunt assertions and argues for a level of caution against such fundamental misunderstandings. In another, the denialists see no prospects for the materialisation of African capitalism essentially because it tends to deviate or takes a different shape from the ideal model of the west. Capitalist relations in Africa have, thus, been reduced to pre-capitalist modes of engagement (Cooper, 2014). Others, on the other hand, have found evidence that capitalism, as an economic and social system, is rife in Africa (Bartlet, 1990).

The case of Kenya is particularly interesting because it opened up an important debate from the 1970s onwards, known as 'the Kenya debate' which was focused on the question of whether African societies can be considered to be capitalist or not (Himbara, 1993, 1994: Berman and Leys, 1994; Kitching, 1985). The debate ultimately rested on the question of whether capitalistic development in Africa is possible, and for a domestic capitalist class to develop the productive forces within it, with or without the help of foreign capital (Leys, 1996). The question remains relevant in twenty-first century Africa today since it raises some interesting points of analysis

that need to be brought back on the research agenda in connection with some parts of the continent, such as Ethiopia, where industrial policy is seemingly geared towards industrialization that relies heavily on the emerging domestic capitalist class. Largely influenced by the scepticism of the dependency theory on the prospects of capitalist development in post-colonial Africa, the debate did raise important questions. These questions were pertaining to 1) whether there existed an internal capitalist class sufficient to sustain economic growth; 2) the capability of this class, and the extent to which it was replacing foreign capital; and 3) whether the Kenyan State was under its control, or at any rate responsive to its wishes, vis-à-vis foreign capital.

In post-colonial Kenya, contrary to the observations of dependency theorists, the state showed little ambivalence in its effort to promote indigenous capital. Not only did government officials and politicians there use state power to benefit local enterprise, despite its initial weakness compared to foreign capital, they also engaged in private business activities in their own right, placing their own personal funds at risk as well as loans obtained from the public purse (Kennedy, 1988:95; Freund, 1984). This is quite the opposite to what has happened in Tanzania where there is little evidence that the ruling coalition – despite decades of political stability – has used its position to build and strengthen the productive capacity of domestic entrepreneurs (Therkildsen and France, 2016). Kenya's apparent developmental wherewithal to industrialize using domestic capital qualifies it to be considered an exemplar post-colonial state in the league of post-colonial states that had an admirable stint in nurturing an indigenous capitalist class. For, even when during the moments when domestic private capital in other countries was overlooked in favour of foreign capitalists or the state for political reasons, the Kenyan nationalist political party was able to support African accumulators whilst still retaining substantial popular backing in the country (Freund, 1984).

In most other African post-independence states, the relationship between domestic capital and the state has generally been complex and marred by conflict. The weaknesses of indigenous African capital meant that it could not be relied on as a viable partner for development by ruling class elites (Buur, Therkildsen, Hansen and Kjaer, 2013). Having played quite a limited role in the liberation struggle, the national bourgeoisie had limited power vis-à-vis the state such that even if they did desire to advance capitalist production, they could not leverage policymaking in their favour (Mkandawire, 2001; Gray and Whitfield, 2014). There were moments, however,

where the evidence suggests that the development of forces of production was on the rise quite rapidly in agriculture, industrial production and infrastructural investment (Sender and Smith, 1986; Kennedy, 1998). African states did in fact promote indigenous capital through various policy measures designed to place the hands of local capitalists on the driving wheel of the economy, including the launch of indigenization programmes, expansion of credit institutions, and pushing out foreign trading minorities from some sectors (Mkandawire, 2001). The result was a slow growth in African capitalism at first, and then a more rapid growth between the 1940s and the 1960s. In Nigeria, for instance, the policies implemented by the state in the 1960s showed favourable treatment towards Nigerian local capital (Freund, 1984; Schatz, 1984; Forrest, 1992).

Examining the conditions under which capital accumulation has occurred in Nigeria, Forrest (1992) argued that conventional assessments of Nigerian entrepreneurship, which typically locate Nigeria's accumulation patterns as non-capitalist and wealth acquisition as heavily comprador in nature underestimated its vitality[4]. As opposed to the popular notion that there existed unproductive patterns of investment and political forms of accumulation, Forrest (1992) show that Nigerian enterprises were, in fact, growing and engaged in long-term productive accumulation. Contrary to the postulated of 'Agro-Afro-pessimism', initial successes were registered in places such as Kenya, the Ivory Coast and Malawi (Oya, 2010). The 'Ivorian miracle' which took shape in the 1950s and afterwards is another clear example of success where African cocoa producers were able to organize labour and production for export markets, and through this the promotion of linkages to other economic activities occurred (Cooper, 2002). Before Tanzania's descent into de-industrialization in the 1980s, the country was characterised by its efforts of rapid accumulation and productive capacity building in the 1960s and 1970s (Khan and Gray, 2016).

For Leys (1996), although these are questions that should have been engaged with, a more important issue that should have been the main empirical focus of this debate – more than the technical and financial or otherwise efficiency of this class (technical competence is relatively easier to acquire (within limits) but what cannot be imported are the cohesion, organization,

[4] A concept used by dependency theorists in relation to domestic entrepreneurs that develops under under the umbrella of global capitalists and never develop a productive outlook.

leadership and political skills necessary to secure the needs of the hegemony of the productive class so that state policy serves the needs of capitalist production) – is whether this class has the political competence, since really it is 'a politically powerful domestic class of capital with an orientation to production that is likely to be necessary to secure the political (as opposed to economic) conditions for the expansion of capitalist production' (Leys, 1996:153).

The real question for Leys in this debate should be 'how far has the class that has the greatest interest in surmounting and resolving the problems confronting capitalist development in Kenya identified these problems or shown itself able to tackle them'? Returning to a debate of this nature and posing similar questions in relation to a country like Ethiopia is warranted to two reasons. The first is that answering it can shed light on some of the successes and likewise limits of industrial policy experimentation of the kind that Ethiopia is engaged, namely employing certain firms as instruments of the Ethiopian developmental state to incubate a domestic industrialist class. Second, a focus on these questions arises out of the need to challenge the substantially-shallow neopatrimonial logic, which inherently has no scope for thinking about the possibility of the emergence of productive capitalists in Africa let alone the possibility of developmental states because it reads everything off as negative power play and state intervention as bad.

2.8.5 State-owned Enterprises as Instruments of Developmental States for the Promotion of Domestic Capital

State-owned enterprises are considered to be one of the common tools of economic transformation and catch-up. They have played an important role in the promotion of industrial upgrading, act as state capital in the funding of new knowledge and profitable projects that would have otherwise remained unfunded and in the development of industries that are considered to have high entry barriers, high-fixed capital requirements, too risky or expensive for the private sector to enter on its own. They have also been important in the execution of mega-projects that are particularly aligned with development objectives of governments of newly industrializing countries (Amsden, 1989, 2001; Musacchio & Lazzarini, 2014; OECD, 2013). During the early stages on industrialization, SOEs may act as entrepreneurs, investors and in

partnership with the private sector in areas where the state believes the market system would not invest.

SOEs can also be a vehicle to promote and prop up nascent industries (Musacchio & Lazzarini, 2014). Rodrik (2004), points out the difficulty of starting new industries in which there is uncertainty about costs and possible demand. This is what he calls "discovery costs." If such costs are high enough, they will prevent the development of new products or technologies. For instance, entrepreneurs need to experiment before finding out whether a product is feasible; a process that costs money and time whether it succeeds or fails. SOEs can play a role in overcoming such market failures and experiment with new high risk industries. In addition to this Khan (2016) argues that firms engaging in the discovery of latent comparative advantages face the additional problem that their discovery will be a public good and the market will not fully compensate them for it, In other words, there is a problem of incentivizing first movers who often face a loss or lower profits than followers. The SOE can play a role here too, so that other entrepreneurs can replicate the state's success.

In Latin America, the Brazilian government developed a large apparatus in sectors that were the key for the industrialization of Brazil and still left the private sector as the dominant player in other sectors where state action was not perceived as necessary. The state dominated mining, metallurgy and steel, public utilities and petroleum. Consistent with the industrial policy view, these key industries in which the state operated were also industries with high spillovers and forward linkages. Evidence presented by Chang & Singh (1997) as well as Jalilian & Weis (1997) revealed that there is no reason to assume that SOE performance is weak due to them being owned by the state. Neoliberal scholarship, especially from within the World Bank has, however, opposed the use of SOEs in direct economic activities and asserted that private sector-led activities appear to be constrained by policy choices that favour public investment (World Bank, 1995, 2013; Shirley, 1997).

Consequently, privatisation of SOEs has been included as key component of the Washington Consensus. One of the main arguments against SOEs is the apparent bureaucratic decision-making that hinders free exchange. Yet, according to Chang and Singh (1993) bureaucracy is a feature of all large firms, private or state-owned. Pervasive claims, also, of privately-owned firms being more efficient than comparable state-owned firms have ben refuted by Muhlenkamp

(2013). In reality, the difference that is often drawn between private enterprise and state-owned enterprises evaporates on close inspection. Often and regardless of ownership, firms –especially large ones, exhibit substantial similarities in common areas where they are commonly thought to distinguish SOEs from private-owned enterprises. Similarities are observable in both types of ownership in terms of areas such as market dominance, receipt of subsidies, proximity to state power, and execution of the state's policy objectives (Mihaupt & Zheng, 2014).

State ownership did not only mean being active as producers and manufactures. SOEs also acted as coordinating entities at the top tier of production so as to oversee entire sectoral development, develop basic infrastructure or provide basic inputs for the industrialization of the country (Musacchio & Lazzarini, 2014). Amsden (2001) provides an extensive account of the way in which SOEs in East Asian developmental states emerged and operated as showcase 'national leaders' that were, in many cases, important for crowding-in national private sector firms. They also exercised considerable power over all levels of industrial transformation and facilitated technology transfer among them. The scope of their tasks was unlimited as they were famous for undertaking exemplary technology transfer and overseeing its transfer throughout the production chain (the China Petroleum Company in Taiwan), accumulating and strengthening professional management and technological capabilities, diffusion of those capabilities to the private sector, managing other complex enterprises, invested in R&D, and became a technical and training ground for technical staff needed to manage second tier production (Petrobras in Brazil also known as "the school of petrochemical management) as well as entrepreneurs who later entered the private industry.

Some key examples of diverse and creative forms of state ownership include: the joint ventures between the government and private capital (mostly a foreign technology leader) such as the case of Maruti-Suzuki in India's automobile industry and USIMINAS in Brazil's steel industry; a 'model factory' with a mixture of state, private and foreign ownership (such as the world's largest producer of foundry chips, the Taiwanese semiconductor manufacturing corporation); a defence-related contractor that benefited from dual-use technology transfer (such as the systems engineering division of India's Wipro Infotech Ltd.); a privately owned enterprise 'crowded in' by an SOE; small firms hatched and husbanded by a public research institute (such as Taiwanese Acer computers in the Hsinchu Science Park). Due to the exceptional state power they possessed,

SOEs in joint-partnerships or ventures were able to discipline a foreign partner or generally promote national goals.

Even in cases where it appeared that SOEs had no economic or social benefit, the political motivations behind their creation served an important purpose. Amsden (2001) argues that during periods in which racial or ethnic conflict was pronounced in Malaysia, Indonesia, Thailand, and Taiwan, governments were politically motivated to avoid concentrating resources in the hands of Chinese-owned companies (Taiwanese-owned companies in the case of Taiwan). SOEs rather than private enterprises were formed to encourage social harmony. In Argentina, Brazil, Chile, Mexico, and India, where class conflict was latent or severe, governments were politically motivated to avoid concentrating resources in the hands of only a few private national firms.

2.8.6 The Role of Military Enterprises in the Promotion of Domestic Capital

The starting point for most research on the role of the military in development is to present arguments that view the involvement of the military in production more as an obstacle as opposed it to being an instrument of development. In fact, the role of the military in the economy is often framed around the logic of the neopatrimonialism. The main idea is that there is little to no economic merit in military businesses, but instead they are often established with the intention of masking the reality of transferring distributional rents to military elites who are loyal to and serve at the pleasure of political leaders and their authoritarian regimes (Giustozzi, 2011; Gokgur, 2012; Huggins, 2014). The implication, following an orthodox liberal outlook, is that armies should not be incorporated into elite bargains, but instead be completely subjected to civilian control. The main idea is that the less that the military is involved in production; the better economic outcomes are going to be.

One key example, which is relevant for thinking about questions of the military's involvement in a country's economic affairs, is the military business literature whose main thrust entails a focus on the economic risks that are often presented by these business types. According to this literature, military businesses are either likely to fail, be centers of corruption or have a deficiency in professionalism due to, unlike other kinds of state-owned enterprises, their

suffering from a ‘lack of budgetary transparency’ as well as for their ‘dubious net effect’ on economic development (Gebregziabher, 2019). The work of Brömmelhörster and Paes (2003) is influential in the critique of military run businesses due to the supposedly unfair advantages they are prone to receive such as: (1) free or subsidized access to inputs (manpower, raw materials, electricity); (2) preferential and often subsidized access to transportation infrastructure; (3) special tax privileges; and (4) political protection through their special relationship with government. In addition to the problematization of military run SOEs from the broader neopatrimonialism lens, there have been strong undertones of the problematic public choice theory and ‘good governance’ analysis centered on issues of transparency, nepotism, corruption, rent-seeking, inefficient resource allocation (van Veen, 2016; Berhe, 2017).

As a result, this has largely confined the debate to a narrow and shallow understanding that is too myopic, circuitous or pedestrian to shed light on important questions of economic development. Whilst seeming to present prescient forecasts of the failures of military business, it ultimately serves as biased forms of a priori skeptism of the military’s involvement in economic development. It is therefore not a surprise for researchers to see failed outcomes as only serving to vindicate logical reasoning, namely that the military should not get involved in economic activities. Borrowing from Handley’s (2015) interrogation and critique of the analytical assumptions that are often made by classic theorists about Africa's middle classes and its relationship to the private sector, similar questions can be raised about military businesses in Africa; Are they not of multiple kinds of variations and hybrids that do not necessarily conform to the universalizing and overgeneralizing analytic assumptions that are often made about their character and nature which tend to paint the African state with a broad brush as being inherently neopatrimonial?

This thesis adopts a nuanced approach to the study of the role of the military in economic and industrial development. It is one that is consistent with Alice Amsden’s (1977) understanding. Amsden’s (1977) view, which is in alignment with Marxist theory of the state, is helpful since she located the role of the military as an instrument or institution of the ruling class that can be used to further the industrialization agenda. Amsden (1977:753) theorizes about the role of the military in development by placing the theory of the state at the core of the analysis. In questioning Mary Kaldor’s exploration of the role of *‘The military in development'* (1976),

whose primary focus is on the military 'force' and use of that force to further its agenda, Amsden (1977:756) instead argues that "force is subordinate to the economic order and the instruments of force are subordinate to the mode of production". That is to say, even though the two may reinforce each other "economic order is primary and force is secondary".

Amsden (1977) sees the military as a 'neutral' institution or instrument of the ruling class, much like other ubiquitous organs of centralized power, such as the police, bureaucracy, and judicature. Why? While "the army may set the rules of the game by which politicians are permitted to play" it is "unsuited to decide on matters of taxes, tariffs and trade". Ultimately, the decisions concerning the allocation and distribution of resources rest with the ruling class. Amsden (1977) brings to our attention to an observation about class relations in Third World countries that holds relevance to the study of domestic capitalist class and its economic relations to the military in places such as Ethiopia. Amsden (1977:754-755) observed that in those countries, there is "…a weak local bourgeoisie (that) is unable to develop the productive forces alone, (which) relies on the military and stronger capitals provided by the imperialist powers…" is all too relevant to contexts such as Ethiopia where Meles Zenawi so astutely pointed out the weakness or absence of a local developmental bourgeoisie: "we don't have that national business class" (de Waal, 2018:4)

The model of the military involvement in economic development is not new in Africa, and not all cases of military businesses or industrial enterprises on the continent have been a dramatic failure. Denel, for example, the South African state-owned arms producer, managed to develop considerable technological capabilities during the apartheid period (Goldstein, 2002). In the case of Rwanda, which also features prominently in the military-owned enterprise literature, Booth and Golooba-Mutebi (2012:379) have argued that the operations of the domestic military investment company, Horizon, can be seen in light of the kind of centralized generation and management of economic rents that distinguish the more developmental regimes of Asia and Africa. Apart from investing in strategic sectors, the company has also acted as an attractive partner for international investors.

A crucial strand of literature that speaks to the important coalescence of the military and economic development in the historical development of industrialized and late industrialisers needs to be engaged with in order to make sense of the military run SOEs on the African

continent. Different country experiences and cases show us a variety of forms and areas of economic activity in which domestic capitalists eventually emerge from a proactive role of the military where they did not exist before. Heterodox literature, in particular, gives us examples of how extremely powerful military groups on the African continent that are incredibly integrated into the economic life of a country can lead to the advancement of domestic technological capabilities in both the state and the domestic private sector.

The likelihood of success in military endeavors or the success of the bi-products of those endeavors has also been noted, particularly in a number of high-tech sectors or industrial activities that previously did not exist in a country. This is why the recommendation by the (Berhe, 2017 that suggests that the Ethiopian military should deploy its technical capacity exclusively in defense industry operations that serve the army, such as maintaining and limited manufacturing of tanks, air craft, and military communication systems, and not in civil operations, is narrow and overlooks historical developments elsewhere.

This kind of analysis can be criticized because it marginalizes the global and historic role of industrial policy support to both the private sector and state-owned enterprises and assumes that economic development is an outcome of free market forces. Literature from both industrialized and newly industrializing countries literature shows how military-industrial complexes have been a primary player in the rise of modern manufacturing sectors in many nation-states such as the United States, Sweden, South Korea, Taiwan, Israel, Argentina, Brazil, China and Russia and their economic development. Looking into South Asia, Evans (1995b) details how the Indian information technology company, BEL, which was founded in the early 1950s, and operating under the Defense Ministry's Department of Defense Production to primarily supply the military with electronic equipment rapidly expanded to become the largest producer of electronic goods, whilst always making a profit.

Amsden (2008) argues that the popular narrative of the Indian software industry having its origins in private enterprise is far from the truth. The industry, Amsden (2008) claims, has its roots in a government-funded military R&D installation which was in partnership with a prestigious graduate engineering school. In Vietnam, Ngo (2013:114) attributes the success of the Vietnamese telecommunications sector to the military-owned state enterprise which

"operates its business in an uncommonly disciplined working environment, much more so than other private and foreign businesses in Vietnam". In Latin America, military regimes in Brazil, for instance, pursued heavily state influenced industrial development strategies with objects of self-sufficiency and import substitution. Brazil's COBRA (Computadores e Sistemas Brasileiros SA), which set in motion Brazil's domestic electronics industry by successfully designing original computer architecture with its own indigenous operating system or places such as Brazil where Embraer, the aircraft business, which was set up in the postwar period, are just some of the examples of enterprises born out of military developmental initiatives.

In the United States, although the Defence Advanced Research Projects Agency (DARPA) is mainly a research agency responsible for funding science research, it has always had a very strong industrial policy mandate and is thus able to perform functions that resembles the role of military enterprises elsewhere, which includes "targeting resourcing in specific areas and directions; opening new windows of opportunities; brokering the interactions between public and private agents involved in technological development, including private and public venture capital; and facilitating commercialization" (Mazzucato, 2011:76). Mazzucato (2013) chronicles how the internet and some of Silicon Valley's most prime inventions emanate from the United States military industrial complex. Historically, to get to the point where military enterprises could be regarded as a success took years and years to achieve after serious setbacks that sometimes threatened their very existence and coming close to wiping out their infant industries. In some cases, while the military initiatives themselves did not eventuate into success, they played an important and impactful role in spearheading dynamism for domestic capital that would later emerge, which would have otherwise not happened without the initial investment, expansion and efforts of military-linked companies.

Regarding the usefulness of the military having autonomous status in economic matters, Mazzucato (2011:79) argues that in the case of the United States, while other government programmes had more formal and bureaucratic structures, DARPA has a 'dynamic and flexible structure' and is "connected to but separated from government". It is to this characteristic that DARPA owes its ability to spearhead "learning of the paths identified as 'dead ends' by others" The agency was also able to advance competition within its widely expanding network as well as disseminate knowledge through facilitated workshops for researchers to gather and share ideas.

Through the freedom and flexibility afforded to DARPA, its officers could engage in business and technological brokering as well as maximizing linkages by" linking university researchers to entrepreneurs interested in starting a new firm; connecting start-up firms with venture capitalists; finding a larger company to commercialize the technology; or assisting in procuring a government contract to support the commercialisation process". Given the considerable budget autonomy to support promising ideas, DARPA could go beyond the conventional research and innovation function and funding of research, but could also make use of procurement functions to help small firms enter the market. The principle of the reciprocal control mechanism was always part of the equation since "DARPA personnel are encouraged to cut off funding to groups that were not making progress and reallocate resources to other groups that have more promise" (Mazzucato, 2011:80).

With regards to autonomy, the lesson from the French experience, as outlined by Meisel (2004), is that there may be a need for leading industrial firms to be insulated from political interferences and maintain greater autonomy in their decision-making. As such, the curtailment of certain external influences means that companies can make the difficult and risky decisions concerning investment and learning with the requisite level of freedom. It is also not an uncommon feature to find in East Asian developmental states. The South African experience of industrial policy, on the other hand, where, for example, the responsibility for industrial policy straddles across various ministries and government departments with no single strong coordinating agency such as MITI in Japan or Industrial Development Bureau in Taiwan, puts the problem of dilution and unfocused industrial policy into sharp focus.

Disciplining managers of SOEs and parastatals has always been political economy dilemma in the management of industrial policy that historically appears to have been better handled by East Asian developmental states than by Sub-Saharan states (Gray and Whitfield, 2015). Governments of East Asian developmental state seem to have found the delicate balance between granting autonomy SOEs or parastatals and exercising discipline on managers of these firms (Meisel, 2004). In France, too, the quality that stands out as having been the driving force for success for nationalized firms operating in the post-war period is how disciplining mechanisms were imposed upon them to constraint the substantially large degree of autonomy enjoyed by managers (Meisel, 2004). More precisely, the empowerment and autonomy afforded

to high-level management was undergirded by properties of accountability, consultation, negotiation and surveillance, and other disciplining mechanisms which included public service requirements, local or regional development objectives, designated markets and suppliers, controlled prices, controlled access to financing, employee status similar to that of civil servants with limited manager's discretionary powers to hire and fire, etc. (Meisel, 20040.

2.9 Synthesis

At the centre of the catch-up problem is the shift from producing simple commodities to being engaged in more advanced industrial sectors. The main challenge for developing countries is to find a way to deliberately change their capabilities from low technology, labour intensive industries to these high technology productive capabilities (Chang, 2013; Khan, 2000). The economic transformation from production of low value and volatile commodities to medium and high value manufacturing has in many African countries either been non-existent, limited or shown signs of reversal (Page, 2012). While Austin, Frankema and Jerven (2015) are less optimistic about the average industrialization and transformation in terms of shifts in output towards the manufacturing sector, that has generally taken place in Africa over the two and a half decades, the AfDB (2014a) acknowledges the delayed structural transformation in Africa, but also highlight the successful structural transformation that has taken place in a few African countries, including Mauritius, South Africa and Uganda in last two decades leading up to their research. In their recent work on industrialisation renaissance, Kruse, Mensah, Sen, and de Vries (2021) document the expansion of the manufacturing employment share and value added for 12 sectors in 51 African countries for the period 1990–2018. Their findings point to a rise by 1.2 percentage points to 8.4 per cent in the manufacturing employment share during this period. They also found that while the level of manufacturing activity in sub-Saharan Africa is low in comparison with that in other regions, there has been an increase, which has been important to the reversal of a long-run de-industrialization trend that was documented for the period from 1960 to 2010. Despite these improvements, it remains important for industrial policy to be fully implemented in Africa in order to address the issues of limited structural transformation and for the facilitation of African countries to move into higher value-added manufacturing activities that embody increasing returns-to-scale.

Regardless of the increasing importance of foreign investors on the continent the emergence of African capital within the manufacturing sector needs special attention from governments on the continent. The fundamental problem of capitalist development in African countries is linked to the difficulty of propping up a developmental local capitalist class whose vision is to supplant dominant enclave capitalist groups, including those of foreign origin. The premise of the conceptual framework is that successful capitalist development in Sub-Saharan Africa and the establishment and strengthening of the linkages that are necessary for the deepening and extension of production necessarily requires the emergence of an internal domestic capitalist class. The remaining question is whether such a class can indeed emerge and organize itself around a shared project towards sustainable capitalist development and is capable of leaning beyond light-manufacturing sectors.

The experience of industrial policy in developmental states as well as past experiments on the African continent can help shed some light on the political economy constraints to the successful implementation of industrial policy. The track record of post-colonial states, especially in Southern Africa, in promoting indigenous manufacturing classes has largely been one of failure relative to the success stories of the emergence of productive classes East Asia. The African challenge still remains one of a non-sufficient range of pre-existing capitalist firms that manufacture capital equipment. The relationships between politicians, bureaucrats and indigenous capitalists can help us understand why a strong industrial base has failed to materialize. A call for the return to key debates that occupied scholars in the 80s and the early 90s such as the 'Kenya debate' is made and some key questions that were interrogated at the time are posed in relation to current developments in the region. The complexities of the relations between the state and domestic capital have meant that different countries on the region have varying degrees of initial success with structural transformation during the immediate post-independence period. In some instances, the state made strong direct efforts to support domestic capital, and in some, the relationship culminated into half-hearted efforts or even ambivalence, resulting in a capitalist class that is not only politically weak, but one with low technological capabilities.

Much like Kenya, seen as one of the exemplar post-colonial states in SSA, and is regarded as having the apparent developmental wherewithal by African standards to industrialize, there were

other African countries such as Tanzania and Ghana that have been under the spotlight of academic debate due to their promising efforts after independence, which subsequently petered out due to internal political squabbles. Neopatrionialism has been the dominant framework with the experiences of African development have been analysed. Neopatrimonialism is, however, rejected due to it not being rooted in rigorous enquiry of the processes of capitalist transformation in Africa. In its place is the adoption of a political economy framework identifies the lack of deployment of linkages and distribution of learning rents in a developmental manner as key to understanding the pace and direction of development in Africa. Thus, whether or not corruption and rent-seeking (although not trivial) do occur during the process of rent creation and distribution is far too shallow to a question to dwell upon, if our aim is to go beyond the logic of political clientelism and neopatrimonialism as the basis of the African state.

A definitive feature of developmental states in East Asia was that industrial policy was hinged on the nurturing of a domestic industrialist class in ways that were strategically linked to the state's long-term catch-up goal. However, capitalists pursue profits above all else and so "individuals firms only put effort into learning, upgrading, and industry-level collective action when they are convinced that it will result in increased profits, or when they are compelled" (Whitfield, Therkildsen, Buur, Kjaer; 2015, 25). While certain firms, such as state-owned or military enterprises may be given a learning and technological capability mandate through industrial policy, they may not always be primarily driven by the logic of profit-making. They might also not have the sufficient internal incentives, compulsions and pressures to learn. For such firms, ensuring high levels of effort in learning is no simple affair and it is at this point that compulsion and disciplining mechanisms, other than that of the market, become essential to force firms to put learning rents to productive use. For an aspirant developmental state in Africa to achieve such success, particularly in advanced manufacturing activities, the role of interventionist state policies in mediating the process of learning through an enforcement of a set of compulsion mechanisms and the implementation of reciprocal control mechanisms becomes crucial. Is this the reality for Ethiopia?

Chapter 3

Methodology

3.1 Introduction

The purpose of this study was to examine the question: To what extent does the emergence of a domestic industrialist class in advanced industrial activities suggest that Ethiopia is developing in the direction of a developmental state? The conceptual framework that was presented in Chapter Two was angled towards enriching our understanding of development by looking at attempts made by African states at forming a national capitalist class through industrial policy. This chapter explores the research methodology. Section 3.2 begins with an outline of the chosen case study and motivation for why the case-study approach was adopted as well as its usefulness to this study. Section 3.3 follows with the research strategy adopted by providing outline of the methods for data collection, sampling, analysis and triangulation. A mixed methods approach which combines both qualitative and quantitative approaches was followed. Section 3.4 details some of the methodological challenges of doing political economy research in Ethiopia and issues associated with the chosen research approach, including issues of positionality and the challenges associated with doing development research in Ethiopia as an outsider. Section 3.5 reflects on the research approach which grounds the study in inductive enquiry in relation to the examination of learning and the developmental state, mobilization of literature and interpretation of findings. Section 3.5 entails the ethical considerations.

3.2 The Case-study: the Metals and Engineering Corporation (METEC)

This study adopts the case-study approach due to its suitability for the study of the metals and engineering sector and a further zooming into the Metals and Engineering Corporation (METEC). The decision to study METEC emerged from a creative and adaptive process. It was in 2014 during data collection for research project that I was involved in where I had been responsible for compiling information on the potential of Ethiopia's clothing and textiles sector in another research project that my curiosity for Ethiopia was initially sparked. Up to and beyond that point I had not paid much attention to the developments there, as my interests at the time were mostly in the area of industrial policy in South Africa. Upon taking subsequent and further

interest on Ethiopia, the Ethiopian story generally approached me as one that was orienting towards a SEZ-and assembly-based model for light manufacturing sectors. I generally interpreted it to be this way because that is how it had been mainly represented by the media's hype around industrial parks and the special focus on the attraction of foreign investors.

When I read further, the scantly available research on the metals and engineering sector (Gebreeyesus, 2014), I knew something was missing from the story, because the major state-owned enterprise METEC that I had come across in the media was not given any special and central place in the discussion. This prompted me to take a two-week scoping trip in April of 2017 to Ethiopia to learn more about what I had been mulling over. It was during this trip that the major relevance of METEC within the broader metals and engineering sector was revealed to me. It was also at this time that I encountered Oqubay (2015) who, in his book *Made in Africa: Industrial Policy in Ethiopia*, had provided a detailed and compelling account of the emergence of industrial activity in Ethiopia. Oqubay (2015) made me see things differently and my awareness of Ethiopian industrial policy being used to support sectors beyond the more 'obvious' comparative advantage-following sectors such as leather and leather products, clothing and textiles, flowers, etc. became sharper. I learnt that the government had been overhauling SOEs and using unorthodox forms of support and ownership, to encourage the development of large-scale and capital intensive manufacturing sectors which have been deemed uncompetitive and high risk for pursuit in Ethiopia.

The decision to locate METEC more specifically at the center of this research was made relevant mainly by two factors. First, my initial and uninformed understanding of METEC was that it is one of many firms within the sector with the only exception of being state-owned. The original and initial intention when the proposal, then, was drafted was to take a broad sectoral view of the metals and engineering sector, with no specific focus or priority on any single firm. However, with further reading and interviews, it became clearer to me that the role of METEC was that of essentially leading the development and transformation of the metals and engineering sector and Ethiopia's broader industrialization take-off. The role of METEC in Ethiopian industrial policy, therefore, seemed like a useful case-study to investigate learning processes associated with industrial policy in more advanced manufacturing given the on-going industrial policy support it

was receiving and the expanding domestic market for metals and engineering sector goods made possible by mega-projects and other private and public sector infrastructural projects. As with any inductive research (see section 3.3 on inductivity), for it to be order to be focused, this research has, therefore, diverged slightly from the intention of the original proposal. The corporation makes for an interesting inquiry into the practices of the Ethiopian developmental state and how state-business relations fit within these practices. In addition, it was interesting to observe how METEC and its complex industrial activities are led by the military, which introduces political and political economy dimensions that are not usually observable in other Ethiopian industry sectors. Second, what I had been reading about in relation to METEC in the media and academic discourse did not reconcile with the observations I made during factory visits and some of the preliminary interviews. My first impulse, then, as I took up more interest in METEC was to focus on the question of whether the failures portrayed in the existing and dominant narratives were as radical or severe as they had been portrayed. Overtime, the questions became sharper and focused around the assessment of learning taking place via the corporation and the implications for Ethiopian development.

Overall, this case-study approach adopted in this study best fits Lee's (2002:799) definition of a case study as an "in-depth, multi-faceted investigation of a particular object or them…(that) can be historical or a current life event, and the study will use several kinds of qualitative and quantitative data sources". In addition, the case study approach can be used to "delineate complex sets of decisions over time, …can be concerned with a particular theoretical point,…a narrative that includes structures and causal mechanisms, which, when combined with the history or facts of the event, explain why and how it took place…an integration of theory with the event". For Alan Thomas (2017:301) "case studies are often used as a form of investigation aimed at informing development policy and public action". Whilst the present case study may ultimately lead to informing Ethiopian development policy and public action, I would rather situate it within Chataway, Joffe and Morduant's (2007:96) understanding. For them "the best that policy researchers can hope for is to *illuminate and influence* (italicized for emphasis) the process of policy change. There is no simple direct relationship between research findings and policy change" (Chataway, Joffe and Morduant, 2007:96). It should, therefore, be clear that this

study is not primarily aimed at informing Ethiopian industrial policy, although some key policy recommendations do flow from the research insights.

3.3 Research Strategy

3.3.1 Qualitative and Quantitative Methods

The method employed in this study is fundamentally qualitative, but some quantitative methods are also made use of to a limited extent. The motivation behind the use of qualitative methods is driven by the nature and form of the research questions posed, which lend themselves towards a qualitative case-study approach. As suggested by the research question the intention is, through an interpretive an investigative approach, to get a deeper understanding of the insights into the emergence of a domestic industrialist class, and thereby understand the role and practice of the Ethiopian developmental state in such emergence. Admassie, Berhanu, and Admasie (2016) argue that obtaining a fuller picture of certain aspects of the contemporary Ethiopian situation, such as the political economy of business would need more qualitative study. The nature and form of the research questions of this study typically favour a 'how' and 'why' type of investigation in relation to contemporary set of developments in a particular sector as part of a broader industrialization strategy (see table 3.1 below for research strategy that links sub-questions to data sources). However, qualitative techniques are adopted since they are useful in a case-study when the researcher is 'building a story' in order to provide an original account and analysis of how specific events unfolded and how a decision or set of decisions were taken and implemented, by whom, with what degree of agency and with what result (Thomas, 2007). Interviews were, therefore, especially helpful to insightfully uncover the nature of the relationships and underlying interactions in the Ethiopian state and its relations with business; ultimately allowing me to build the 'story'.

Had I been more interested in the "what", 'how many' or 'how often' type of questions, then it would have been far more appropriate to use quantitative survey methods (Thomas, 2007). Whilst some quantification has been necessary for contextualizing progress on proxies such as technological capability building and linkage formation, for instance, the aim of this study has not been to find generalizable laws or consistent statistical behaviours, which would be consistent with quantifying "common properties and general patterns in a population" (Sayer,

1992:242 cited in Thomas, 2007). Quantitative data is used only for statistical descriptive analysis to capture aspects such firms. There have been limitations on the availability of key data that would allow me to give a general quantified answer to the questions. Ethiopia is not only at a relatively infant stage of industrialization, but also has the limitation of unreliable data sets. The other challenge with doing research in Ethiopia is that, as a least income country, "learning is difficult to quantify, measure or observe because much of the activity […] is experimental and tacit in nature" (Oyelaran-Oyeyinka & Sampath, 2010:64). Much of what I have endeavored to understand within METEC and its structure is a phenomenon of aspiration that is currently unfolding and experimental. Therefore, much of the quantitative data that would allow me to enquire into the question of learning and pass a more thorough judgment to confirm its existence is either still in development or not yet extensively made available to the general public. Notwithstanding all of the limitations of quantitative proxies I was still able to find quantifiable evidences of transfer of know-how, and this complemented the understanding of learning-by-doing that was gained from the interviews. To try and overcome the challenge of the unavailability of certain quantitative data I adopted an approach that has sought to pursue every possible avenue available to me to collect relevant data to answer the question. This included relying on secondary data sources such as gray material and media reports to piece together some quantification of the extent to which local entrepreneurship has been stimulated by state investment and industrial policy.

In sum, the use of both qualitative and qualitative methods is motivated by the understanding that that the kind of 'animal' that the development process is; isn't something that can be simply read exclusively off numerical indicators or measures. Numerical proxies are not necessarily enough, in and of themselves, to capture the dynamic of development and catch up, at least not in all cases[5]. Qualitative methods are as useful in the evaluation of phenomena that are crucially at the intersection of politics, society, the economy, and economic actors. Table 3.1 links the different sub-questions to the sources of data and some explicit qualitative and quantitative measures or indicators of learning and outcomes. The assessment of the processes and outcomes of technological capability building and the quality of learning done here is centered on the technological learning model that was developed in Chapter two.

[5] Amsden's approach to the study of industrial policy in East Asia and Brazil demonstrates this (Seguino, 2014).

The learning-by-doing metrics were developed include measures such as: guidance in the selection of technology by the state; domestic project execution capacity; development of technological infrastructure; training and skills formation (including expertise and knowledge); promoting in-firm technological capabilities; building institutional networks; innovate research; local content requirements; joint-ventures; prohibition of turnkey projects; giving preference to reverse engineering (learning by copying, emulation); co-production; foreign licensing; giving preference to local consulting firms to supervise projects; creation of institutions and policies that promote technological capabilities; and knowledge acquired and experienced gained.[6] This domestic technology capability approach, and its concomitant focus on learning, is at the center of our analysis in understanding success and failure. These different aspects are mobilized in my toolbox as part of the range of tools that are important to formulate a complex understanding of the conditions under which learning is happening and the extent to which the Ethiopian developmental state might be consolidating.

Table 3.1 Research strategy linking sub-questions, data sources and measures of learning/outcomes

Sub-questions	**Data sources**	**Competencies/Indicators**
Is there evidence of learning in advanced industrial activities? Through which channels is this learning happening, and how much of it is being accompanied by the development of a local capitalist class where previously it didn't exist?	Interviews: METEC senior managers, industry associations, professional bodies and societies. Factory visits and observations. Government databases: Data from Ethiopian Investment Commission, Ministry of Industry, Ethiopian Kaizen Institute.	Chapter 5, Chapter 6: quantity and qualitative features of technology transactions, extent of diversification, import replacement, linkage formation, promotion of local staff into senior technical and managerial roles; investments in new technology or continuous technological upgrading over time, license upgrading, the amount of on-the-job training that is being given to local workers,

[6] The technological capabilities framework encompasses investment capabilities where measures such as personnel training; pre-investment feasibility studies; project management; project engineering; procurement; operational start-up are part and parcel of the processes that matter.

	Documents: Academic and industry documentation, media reports, business reports, company catalogues, periodic newsletters and press statement releases, sector exhibition publications, consultancy reports, overseas expert agency research reports, industry conference reports, and firm leaflets.	technicians, engineers and managers and at which levels; formal training; certifications and adoption of industry standards; mushrooming of local firms happening as spin-offs and around the main sector/activities.
How are rents being deployed and managed by way of reciprocal control mechanisms (RCMs), so as to permit and sustain the accumulation of experience and learning in these industrial activities?	Interviews: METEC management, Ministry officials, Investment commission officials, Sectorial institutes, research institutes, independent sector experts. Media reports on industrial policy interventions and incentives, procurement notices, business reviews, expert analysis Sector/industry plans, industry reports, policy documents, publicly available ministry or agency annual/bi-annually or quarterly reports	Chapter 6, Chapter 7: An understanding into the extent to which cooperation; nudging; forceful insistence of cooperation between foreign capital and domestic capital; monitoring; performance evaluation; disciplining of recipients of rents; seriousness in building state capacity; agility, adaptation, and changes in policy learning.

Do the state-capital relations between domestic capitalists and the state/ruling elites constitute a growth-enhancing relationship, which taken together with learning-by-doing, show any prospects for a shift towards independence in taking on domestic projects, presently and in the long-term?	Interviews with METEC management, Ministry officials, industry association officials, firm interviews. Media reports Current and previous government representatives involved in metals and engineering sector	Chapter 5, Chapter 6, Chapter 7: how much does the state respond to the (progressive) demands of the private sector; proactive interventions by state with policy instruments (tariffs, credit facilities, incentives, decrees, regulations, competition measures); growth-enhancing rent-seeking; institutional support; local content promotion. Ability of domestic firms to supply inputs at large scale, ability to take on more diverse projects; significant involvement in subsequent governmental projects.
Do the increasing societal pressures for redistributive rents frustrate, distort or derail the Ethiopian government's efforts towards building domestic industrial capabilities in advanced industrial activities?	Interviews with METEC management, political figures, Academic literature, media political analysis, government institution websites, official policy documents	Chapter 7: degree of contestations over rents; analysis into the nature of economic and political reforms.

Source: author's own formulation

3.3.2 Sampling and data collection

3.3.2.1 Semi-structure Interviews

The evidence in this study has been constructed using a number of sources and methods of data collection. I spent a total of five months in Ethiopia in different fieldwork trips (April 2017; two and a half months between November and January of 2017 and; August, October, and December

of 2018) doing interviews with key stakeholders and experts. All interviews follow a semi-structured approach to give allowance for open ended responses. The average duration of each interview was about one hour, but a few others took between one and two hours depending on how much information the interviewees were willing to give. A combination of initial snowballing, convenience purposive selection, suggestions from other researchers, initial desktop research was relied on for almost all the interviews. Due to the relatively small sample size and the interviews not constituting a statistically significant sampling process, the participant views cannot be considered exhaustive or comprehensively representative of the majority or official positions that exist in the field or statistically significant enough to make conclusions based on measurable properties. That being said, however, they were able to provide original insights that are sufficient enough to generate a range of views on the extent to which learning is happening, thus making a significant contribute to a complex debate that perhaps revolves around a number of compounded and challenging factors.

Table 3.2 indicates the categories of interviews which were concluded. At METEC, a total of fifteen interviews were conducted with senior managers and engineers and 5 METEC subsidiaries were visited and factories/facilities toured (Hibret Machine and Machine Building Industry, Bishotfu Automotive Industry, Adama Agricultural Machine Industry, Ethiopia Power Engineering Industry, Research and Development Centre). During factory tours, I made direct observations and took pictures with the aim of capturing the state of technological advancement, the flow and organization of production processes, raw materials being used for inputs, the type of products being made, type, age and origin of machinery, competences and tools being used. With the exception of Adama Agricultural Machinery Industry, all the other subsidiaries I was subsequently given access to and did visit and do interviews with were within the surrounds of Addis Ababa. The process of obtaining interviews for METEC officials/managers was formal and began with my request for permission from the Deputy Director General's office. After receiving permission (see permission letter example in appendix 1) the interviews were organized centrally by the Deputy Director General. I was not allowed access to interview workers, technicians and low-level management, but this did not affect the quality and depth of my findings.

A total of fourteen interviews were conducted with senior officials at nine government bodies consisting of government ministries, agencies and institutes (see appendix 2 for example of research permission letter from the Ministry of Industry). Some invited participants were not willing to be interviewed or if they did, they ended up providing shallow insights that were not worth considering for analysis which was excluded from this study. A number of other interviews were concluded with industry experts, academics and independent policy experts, industry association officials, professional association officials, a memorial foundation director, government industry research institute researcher, international industry organization experts, etc. (see table 3.2).

With respect to interviews with managers or owners of domestic private sector firms, my intention has been to focus specifically on those firms with direct sub-contracting relationships with METEC. I wanted to elicit information on their technological capability development strategies and the relative security or precarity in terms of their economic positions after doing business with METEC. The original plan was to do interviews with up to twenty general managers or owners, but in the end only nine firms were interviewed and of those, four factory visits were made (see permission letter for interviews with private sector firms in appendix 3). My request for a list of firms that do or have done business proved to be unsuccessful because METEC deemed the list to be private and confidential.

Through archival research I was able to piece together some of these contractual relationships and the extent to which emergence and upgrading was happening. As I was about to embark on a fieldtrip to explore more via interviews in April-May 2020 the COVID-19 pandemic outbreak happened and travel restrictions made it impossible to travel from South Africa to Ethiopia. This was further compounded by the risk of travelling to Ethiopia during what appears to be an outbreak of a civil war in the latter months of 2020 and early in 2021. Due to a fixed end-date to the fieldwork and writing period I could not wait any longer for the situation to dissipate before I could resume interviews. Telephonic/Skype interviews were considered as an alternative, but the telephone/internet network line between South Africa and Ethiopia does not provide audible quality. What makes up for the limited interviews with domestic private sector firms is the archival data and secondary material that was sourced from various organizations, which helped

me document and map the technological capabilities and dimensions of learning in the private sector.

Table 3.2 List of interviews by category

Institution	Interviewees	Code
Metals and Engineering Corporation (METEC)		
Metals and Engineering Corporation (METEC)	Head of Operative Planning and Control	METEC-I1
	Director, Transformation	METEC-I2
	General Manager, Hibret Machine and Machine Building Industry	METEC-I3
	Director of Research and Development Centre	METEC-I4
	General Manager, Bishoftu Automotive Industry	METEC-I5
	General Manager, Adama Agricultural Industry	METEC-I6
	R&D Manager, Hibret Machine and Machine Building Industry	METEC-I7
	Director, Technology	METEC-I8
	General Manager, Ethiopian Power Engineering Industry	METEC-I9
	R&D Engineer, Research and Development Centre	METEC-I11
	Senior Engineer, Ethiopian Power Engineering Industry	METEC-I12
	General Manager	METEC-I13
Private sector firms		
Domestic firms operating in the metals and engineering sector	9 local firms (4 factory visits)	DPSF
Government Bodies		
Ministry of Industry	Director, Metal Engineering Industry Sector Survey Supervision and Support Directorate	GB-MOI-1
	Domestic Investors Transformation Directorate	GB-MOI-2
Ethiopian Kaizen Institute	Metals and Engineering technology transfer and development directorate	GB-EK-1
	Director of Technology Transfer & Business Development Directorate	GB-EK-2
Metal Industry Development Institute	Institute Planning and Information Director	GB-MIDI-1

	Director General	GB-MIDI-2
	Technology Development Director	GB-MIDI-3
	Engineer, Technology Development	GB-MIDI-4
	Engineer, Technology Development	GB-MIDI-5
Ministry of Science and Technology	Director general of technology transfer and Development	GB-MoST-1
	Technology transfer and development expert	GB-MoST-2
Ethiopian Investment Commission	Expert at Industrial Development Unit	GB-IC-1
Ministry of Finance and Economic Cooperation	Expert	GB-MFEC-1
Central Statistical Agency	Director Business Statistics Directorate	GB-CSA-1
Government Industry Research Institutes		
Ethiopian Development Research Institute	Researcher	GRI-EDRI-1
Industry Associations		
Ethiopian Association of Basic Metals and Engineering Industries	General Manager	IA-EABMEI-1
Professional Association		
Ethiopian Economics Association	Economist	PA-EEA-1
Professional Societies		
Ethiopian Society of Mechanical Engineers	Lead member and former President of Ethiopian Association of Basic Metals and Engineering Industries	PS-ESME-1
Industry Zone		
Eastern Industry Zone	General Manager	IZ-EIZ-1
Business Incubation Centre		
Addis Ababa University Technology and Business Incubation Centre	Manager	BIC-AAUBIC-1
International Organisations		
Japan International Corporation Agency (JICA)	Kaizen expert	IO-JICA-1
Universities		
Addis Ababa University, Addis Ababa Institute of Technology	Director of University Industry-Linkage and Technology Transfer	U-AAIT-1

Memorial Foundations		
Meles Zenawi Foundation	Director	MF-MZF-1
Academics/experts/practitioners/		
Political economy Expert	Academic	AEP-PEE-1
Political Economy Expert	Academic	AEP-PEE-2
Political Economy Expert and Researcher	Academic	AEP-PER-1
Political Economy Expert/Industrial Policy Researcher	Expert	AEP-PER-2
Political Organisations		
Tigray People's Liberation Front (TPLF)	3 senior political officials	PO-TPLF-1

Source: author's own formulation

3.3.2.2 Document collection

A significant portion of the collected data was in the form of various kinds of documents. These include: national legislations, organizational charts showing clear hierarchy and placement of enterprises, financial reporting in the media, company websites information, journalistic reports, policy reviews, historical and archival documents, government press releases, and data-sets from government agencies, non-governmental organization reports.

In the construction of an understanding of technological capabilities I glean quite significantly on company profiles, data from the Chamber of Commerce, government reports, and journalistic media sources, and data from the Ethiopian Investment Commission, Construction Professionals Company and Construction Machineries Industry Development and Regulatory Bureau, as well as internal studies of the Metals Industry Development Institute, which outline some of the issues relating to a number of indicators and problems, including technology (e.g. types of machineries and equipment available in local firms and institutes), ownership, technology and innovation issues, active and non-active investments, licenses issued, joint-ventures, problems faced (e.g. capacity under-utilization, pressures from imports, availability of foreign exchange, raw material shortages). With all these data sources it was still possible to construct a sketch of technological capabilities that various firms have sought to build over time, compare a number of firm histories in terms of their starting points and current positions, and establish the extent to which, through their engagement in the process of learning-by-doing through various contracts with METEC,

they have transformed their internal capabilities such that they could, on their own or as partners with the government undertake similar or more complex projects or independently in future.

An additional number of documents (policy, strategy and reports) were obtained mainly from the Ministry of Science and Technology. These were useful for examining the innovation and technology activities being pursued by the government. I had hoped that policy documents held by or formerly released by the Ministry of Industry would be helpful to outline some of the industrial policy instruments designed and implemented in the metals and engineering sector, but these were not widely available. Instead, a methodical sifting into volumes of archives and systematic review of the print media, from the Ethiopian Herald in particular, proved to be far more useful since it periodically follows and reports on policy changes that are being implemented for different sectors. I am indebted to staff at the John F.Kennedy Memorial Library at the Addis Ababa University (Mr Wubishet) as well as the staff at the library of the Ethiopian Economics Association (Ms. Eyerusalem Tesfaye) for helping access print media archives that date as far back as 2012. With their assistance I was able to access and scan through the archives of weekly publications of the Ethiopian Herald, the Reporter, Monitor, Capital and the Addis Fortune which all proved to be an invaluable source of data regarding firm investments, government incentives to the sector and other policy tools by the government, tender bids and announcements, and other financial information.

The majority of documents that profile different companies and their levels of technological sophistication, type of products produced, trainings, instruments being used by government to support firms, and documents that detail the history of technological development, industrial policy and sectoral performance in the sector were collected from the Metals Industry Development Institute (MIDI), Ethiopian Society of Mechanical Engineers (ESME) and the Ethiopian Kaizen Institute (EKI). Some of the documents were in Amharic and this presented a challenge for analysis. With the help of the library managers of the Ethiopian Development Research Institute, the Ethiopian Chamber of Commerce and the Metals Industry Development (Mr. Tilahun Abay was very kind and generous), I was able to gather hard copies of as many industry periodicals (Manufacturing Consult, Ethiopian Business Review), company catalogues, periodic newsletters and statement releases (METEC, The Ethiopian Sugar Corporation, MIDI), sector exhibition publications (Annual Ethio-Metal and Engineering Exhibition) and many other

forms of leaflets. From the various government departments and agencies I was able to get copies of tender invitations and bids, technical documents and project management reports. Most of the documents that were analyzed are written in English, but some Amharic documents were translated into English also for analysis.

3.3.2.3 Triangulation

In the face of serious limitations such as data availability and reliability in Ethiopia, triangulation, which Olsen (2004:4) defines as "mixing approaches to get two or three viewpoints upon the things being studied", was important for verification and cross-checking of the results. In triangulation "the resulting dialectic learning thrives on the contrasts between what seems as self-evident interviews, what seems to underlie the lay discourses, what appears to be generally true in surveys and what differences arise when comparing all of these with official interpretations of the same thing". While not all sources are inaccurate, it is, however, a common occurrence to find, for instance, that the Metals Industry Development Institute, the Ethiopian Economics Association and the Central Statistics Agency, which are all supposedly reliable sources, hold conflicting data on the same indicators such as imports and exports. In such cases one had to either triangulate the sources or make an informed judgment on which source to ultimately go with. Secondary grey material, particular news media, became an important source evidence and triangulation.

In interviews, there were cases where I had deep suspicions that certain information was being concealed or particular insights were being biasedly privileged over others. In those cases, especially where strong political opinions or views were being given, I had to carefully balance the insights provided with an interview from someone who potentially held a different perspective on the same matter.[7] Incorporating inputs from multiple sources and across different levels of influence or governance was important. While engaging with different academic and non-academic texts, I discovered that some of the literature's treatment of matters pertaining to the role and place of business and the state in Ethiopia, and more specifically the metals and

[7] A particular example of this was when I was dealing with an informative and insightful, but potentially biased respondent such as Meles Zenawi's daughter, Semhal Meles, who is one of the Directors of the Meles Zenawi Foundation and has previously held the position of a Development Economics Lecturer at the Defense Engineering College.

engineering sector, is most often informed by media narratives due to data availability and accessibility issues that abound in Ethiopia. While some journalistic sources are credible enough to be used in academic research, they need to be carefully triangulated with other data sources that are based on field research otherwise researchers may fall into a trap which Mkandawire (2015) warns about; the tendency of political economy research to take the sporadic media-led evidence as self-evident without solemnly sifting the facts from speculation and accusation or undertaking other empirical work to triangulate such evidence. This is where the strengths of triangulation came in handy, for instance, in introducing political economy complexity to a subject that is currently dominated by narratives of rent-seeking and corruption.

3.4 Methodological challenges and positionality: conducting research in Ethiopia as an outsider

There are various levels in which my own positionality is peculiar. Whilst it has created methodological challenges for me it has, at the same time, allowed me to uncover insights that others have not been able to uncover. In my own research I, as an outsider, had to be conscious of how I should and should not conduct research or write about Ethiopia's most pressing development issues. This is important for any reader who might ask herself/himself "why choose Ethiopia instead of tackling the many and perplexing questions of industrial development in your own country, South Africa"? To which I would respond: I have learnt from Alice Amsden and other developmental state theorists that one cannot be a good development economist with proper grasp of their own country's prospects of development without formulating a thorough understanding of how the main actors (government departments and agencies, factories, plants, suppliers and workers) in other developing countries and other industrialization contexts have interacted with one another as well as with both the domestic and global economy to gradually accumulate a mix of know-how and international competiveness and, thus, ultimately rise to the occasion of catch-up status. Ultimately, the high road of learning is found in understanding the depth what others have gone through in their own developmental aspirations given their unique history and context. This study will hopefully be followed by a project that aims to put the South African developmental state in conversation with the African Tiger, with all its grand developmental state aspirations.

A counterfactual the reader might also have in mind is whether the research and analysis done here would have been carried out much 'better' or be any different in its outcomes had it been conducted by an Ethiopian? There is no doubt that Ethiopians can produce well-researched, impeccable and sophisticated work that is 'detached and balanced' (in the words of John Sutton as he puts it on the cover of Oqubay's (2015) Made in Africa book) questions concerning their own development. There are, however, additional benefits of this kind of political economy research being done by an outsider, which in my experience include the relative ease of not losing objectivity and having an ear for 'the other side'.

As an outside, however, as soon as I started the data collection process, I became acquainted with the many difficulties to researching industrial policy or political economy issues that involve the diverse relationships between the state, powerful groups and classes in society, and corporations in Ethiopia. The biggest challenge was that of information and data often being purposively hidden as well as limited access to respondents. I found that people in senior positions of power, influence or policymaking were reluctant to publicly share the content of their country's development policies. Issues of accessibility and lack of trust were abundant in my attempts to interview government officials in various state institutions such as ministries, agencies or institutes as well as with firms, both private and public sector.

In the process of requesting interviews I initially made the mistake of being too frank about the framework of my research, which sometimes touches directly or indirectly on sensitive and controversial subjects of politics, governance, ethnicity, class, and conflictual scenarios over industrial policy rents. This made some respondents feel uneasy, uncomfortable to speak with total honesty and confidence or suspicious that what I actually wanted was to uncover details that are sensitive, confidential or controversial. This made it almost impossible to secure interviews. Where I did secure interviews, the participants typically responded with answers that are carefully crafted so as to avoid political incorrectness, 'getting into trouble' with their seniors or fears of losing their jobs.

This, I realized, was typically the problem of a less democratic environment where the state embodies authoritarian qualities and where such subjects are taboo and often not open for public debate, more especially when initiated by an outsider. Additionally, the challenges of data access gave me the sense that the Ethiopian government typically wants to avoid criticism, and the best

way to do so is to control interactions between state actors and researchers or journalists by exercising high levels of authority and vetting processes at highest level government offices. Much like in places such as Rwanda, where Booth and Golooba-Mutebi (2012:384) have conducted research, public policy in Ethiopia is similarly "characterised by unnecessary secrecy and its inevitable counterpart, unrestrained rumour-spreading. One of the effects of this is a remarkably low level of knowledge and understanding about some of the topics that concern us, even at quite senior levels in government and in the resident international community".

The respondents from whom I was seeking interviews with or requesting data from were cautious and aware of the punitive implications that might arise should they give information or express dissenting views that run counter to the narratives espoused by the government. Over time and with some learning I learnt that I needed to elicit as much insights as possible in the first shot, since I would be lucky if I was afforded a second round of interviews. I therefore had to gain the confidence of the people I was going to be interviewing even before the interview or the participants were sometimes deterred if they felt uncomfortable with my request or in the first initial sets of questions. From this learning, I approached future interviews with the awareness that not only did I have to employ creativity but also needed to be strategic about how I seek approval, how to phrase my questions during the interviews. I was able to elicit much better and more elaborate responses from then onwards.

Similar issues were encountered in the case of METEC, but with slight nuance. One of the things that seem to characterize METEC is that it is a tightly knit network of a particular ethnic group with a particular history and trust formed between METEC officials. They, therefore, have the tendency to view some questions with mistrust. The resistance, opposition or refusal to cooperate in providing information also flows from the intent of a corporation of this nature to use its position of power and influence to defend or maintain a particular understanding of the way in which it operates or its image. Attempts at obtaining data from METEC, therefore, proved to be difficult at first. In my interactions with a few other industrial policy researchers I learnt of the difficulties associated with accessing data from corporations with close links to the government such as METEC. Reports from the Extractive Industries Transparency Initiative (2018:27; 2019:6) also point out the non-transparent nature of METEC and highlight how for a long time any publication of negative stories concerning METEC was considered an "off-limits" topic for

media or research and that "the level of freedom of expression on sensitive issues such as METEC depended on the person and the seniority of its links to government". During my own initial interactions with METEC's management, it became clear to me that they put in a lot of effort in elaborately hiding information, financial and operational; often hiding behind the veil of confidentiality, classification, security of information, technical jargon, etc. Indeed, as evidenced by the little available academic work on METEC as an object of enquiry, the tendency for researchers has been to shy away from METEC as topic of substantive research. In addition, as custodians of Ethiopian industrial policy experimentation and learning, METEC management is generally not too keen on sharing the hidden secrets, tacit knowledge being developed within, and their interactions with the state. I was, thus, initially discouraged on a number of occasions from further pursuing this case-study.

I then came to the realization that it was important that I should first build relationships with managers and leaders of METEC at different levels so as to gain their trust. One anecdotal example of the amount of time and tactfulness it took to build the relationship with METEC involves the process where I first approached the Deputy Director General for permission to gather and collect data broadly at METEC's subsidiaries. I was at first only permitted to speak to the General Manager of the Research and Development Centre (RDC). He then put me into contact with two senior engineers whom, upon a work visit to South Africa in early 2018, I hosted for lunch and gave a tour of Johannesburg to. This opened unprecedented avenues for access into further interviews, factory visits and documents.

It was even far more difficult to get information out of the private sector than I thought. This was mostly due to fears that they would lose their current contracts or face being blacklisted from bidding for any future contracts should they reveal any sensitive information. In other cases where firms were willing to provide information, they mostly held back from giving referrals to other respondents, often citing the potential for conflictual scenarios to arise. This was all despite assurances of confidentiality and anonymity being given. Some of METEC's contractors felt that they would be legally implicated by association to an allegedly corrupt METEC should they speak about the nature of their dealings and contracts with the corporation. This resulted in superficial answers being given to the interview questions some of the time. In such cases then, what had been reported in the media about METEC and its interactions with the private sector

became substantially important to triangulate and fill the gaps in what had been revealed by the interviews.

Finally, whilst I do not, in any way, hold expert views in matters of the psyche of race relations and its links to fieldwork-led research, neither do I have any philosophical and academic insight in that regard; I do wish to make a passing reflection on the matter of positionality and race. By doing so, my intention is not to introduce any racial stereotypes nor can I claim to speak for or on behalf of my White counterparts and the set of challenges that they face on the field. I also do not intend to invite any feelings of sympathy from the reader for the difficulties that I encountered in conducting this research. It is important, however, without detracting from the research that has gone before me or even underplaying the value of my own research, to reflect on my experience and perceptions of how the field related to me as a Black outsider from another African country.

Hague (2017:28), a researcher who also conducted research on Ethiopian industrial policy, pointed out that "there is…a level of scepticism towards foreign researchers among some government officials and party members, which can only be overcome by building trust over time". More generally, I found that the skepticism towards outsider researcher emanates from participants having dealt in the past with people who, with hidden motives, disguised themselves as academics or journalists. When I, myself, faced the skepticism I could not help but wonder if there was a specific challenge that relates to how the 'field' in places such as Ethiopia may relate to foreigners from different parts of the world in slightly different, but hardly noticeable ways.

I had moments of reflection and wondered if what Straubhaar (2015) describes as a 'White saviour' complex in development practice circles was applicable to the field of development and policy research. Straubhaar (2014:384) defines the White saviour' complex as a special kind of social privilege that is enjoyed by Whites (over Blacks) that "often exhibits itself as a sense that…Westerners have the unique power to uplift, edify and strengthen". A similar phenomenon of social privilege is described by Mayer (2007) in relation the development of theory in development and policy research. Mayer's (2007:261) description of the problem does in fact relate to my observations of the 'politics of fieldwork' and is as follows:

> Data and evidence are not homogenous masses of information, unconnected with where and how they are collected or derived. There are social, political and cultural forces affecting how data and

> the knowledge derived from them are perceived. For example, in some societies it might be difficult for a black, female, research student to have a new theoretical perspective accepted – even if it did fit the data available better than any other theory. In contrast, a white, middle-aged man with a track record in the subject might have the same revolutionary theory accepted much more readily.

Whilst the domain and community in which international education development practice of the kind that Straubhaar (2014) writes about is, for instance, different from that of industrial policy research, the latter can easily be viewed by naïve respondents on the ground as lending itself to development practice with the researcher being perceived as having a high degree of "relevance to the improvement of developing-world living conditions… and uniquely qualified to bring necessary information and change to the global poor" (Straubharr, 2014:385). The role of Whiteness and privilege vis-à-vis Black Outsiders in development economics is something that I would like to see being tackled from a sociological stand-point or other relevant positionality theories. I am, however, grateful to all the organisations and people who helped me navigate fieldwork difficulties and made me feel a whole lot less of an outsider when issues of language, culture and unfamiliarity were many and daunting.

3.5 Research Approach: Inductive enquiry

Qualitative research is typically associated with the inductive approach to scientific inquiry as opposed to the deductive approach that is mostly associated with and favoured by neoclassical economic approaches.[8] The inductive approach is commonly associated with more heterodox traditions such as the German historical school of economics which was more visible in the 19th century. Inductive methods marry history, sociology, economics and other social sciences as evident in the works of, among others, Friedrich List, Gustav von Schmoller and Karl Polanyi (Chang, 2002). These methods have, overtime, been pushed to the fringes of economic enquiry, but are evident in the approach Amsden (1989, 2001, 1997, 2008), for instance, who drew conclusions from specific empirical observations by looking at the rapid industrialization of concrete experiences of the early developing countries as well as the East Asian newly industrializing countries.

[8] See Fine (2011) on the methodological limitations of deductivism.

Deductivism, on the other hand, which has been the dominant way through which social and economic structures in the economics profession over the last century have been understood, mainly lays out a theory or model a priori and draws specific inferences from general, ahistorical, and axiomatic principles mainly through the use of quantitative methods (Moore, 1995; Hoover, 2010). Limitations in the deductive approach in explaining certain phenomenon have been exposed by the financial crisis, for instance, which has served as a crucial reminder that the incorporation of some of the older and more inductive approaches to economic enquiry is an absolutely essential part of serious research. The kind of incremental, inductive and exploratory approach adopted in this study has been a time consuming process, requiring a growing familiarity with the subject matter under observation. The inductive approach was, therefore, chosen as a solution of difficulty out of the realisation that it would allow me to look at political economy developments in relation to complex industrial activities in ways that a deductive approach would not.

In this study, inductivity meant that the research questions, analytical framework and interpretation of the findings were constantly subject to evolution throughout the research and conceptualization process as a whole. Evolution of research questions, evolution of analytical framework and evolution in the interpretation of the findings. The theoretical framework was used to assess the findings and were necessary modify the interpretation and so were the findings used to assess and where necessary modify the framework of analysis. Inductivity was useful in three ways: 1) In the development of the research strategy for the examination of the developmental state (i.e construction and refinement of research questions); 2) in the selection of theory for the construction of the conceptual framework; and 3) in the collection data and analysis and interpretation of the findings.

3.5.1 Examination of the possibility of an Ethiopian developmental state

While this thesis adopts developmental state theory, it has not done so in a manner of using it as a yardstick for defining the institutional characteristics of the state that are necessary for good economic outcomes. My analysis of the possibility of the Ethiopian developmental state is, therefore, not be prefaced with some straightjacketed theoretical construct that conforms, for example, to the ‘classical’ developmental state of the ideal type that many academics wish to copy and paste into their contexts. Rather, I have been convinced by Evans (2010) who makes

reference to the idea that emerging and contemporary developmental states of the 21st century may build on the experiences of and embody similarities with earlier, and typically East Asian, developmental states, but may also differ radically in relation to particular features due to differences in context, domestic and global interests, politics, and pressures, place and time. It is for this reason too that I shy away from interpreting my findings in light of a preconceived theoretical framework that imposes a strict or narrow view of what a developmental state is or should be in some pre-determined sense. Instead, I situate this study somewhere between an evaluative exercise anchored on developmental state theory and an effort to uncover nuanced and practical policy lessons from the empirical dynamics at the heart of Ethiopian developmentalism.

Inductivity demands that I, as a political economist, go further and adapt my own originally constructed analytical framework to the question of the possibility of the Ethiopian developmental state, as well as take into account the concrete realities of the Ethiopian state as they emerge while engaging with them. In other words, I went into the research with an awareness of the dynamism of developmental state features and the specific variation in which the developmental state manifests itself and is contextually adopted in each setting, and Ethiopia is no different. Indeed, apart from evidences of Ethiopia actually drawing its inspiration from the experiences and practices of East Asian developmental state, it needs to be appreciated that the Ethiopian state has its own home-grown conceptualization of what it means for the Ethiopian state to be a developmental state. This conceptualization is articulated in official ideology and policy as well as through key figures that can be identified as architects and representatives of the developmental state.

3.5.2 Selective choice of theory for the conceptual framework

The choice of theory, whose primary purpose is to illuminate the findings of the study, was a necessary and iterative funneling process that has, among other factors, been informed by the inductive and empirically-grounded research approach. A substantial amount of thought and selectivity went into the decision of what and why is to be deployed as part of the conceptual framework during the process of reviewing the theoretical literature. In practical terms, for instance, this meant that when it became clear that METEC now represented a great portion of the empirical focus, I needed to go back and feature a theoretical discussion on the role of the military in economic development in the literature review when originally, the theoretical

framework was not designed to include this perspective. In another instance, whilst the political settlements theory, for instance, was originally incorporated during the proposal stage as one of the core theories to be deployed along with structuralist perspectives, developmental state theory centered on the notion of learning and linkages, it was later relegated to a secondary and complimentary position.

The main challenge with deploying the political settlement theory in the way that Khan (2013), for instance, applies it to Bangladesh does require that any researcher have a lot more textured, nuanced and detailed understanding of the politics of a country than I currently have of Ethiopia. It also requires the ability to read the local press and data sources with a certain level of political consciousness and sensitivity, all of which is out of reach for an outsider. The decision also makes sense in view of Ethiopia being a country of some 100 million ethnically and culturally diverse people with a long and complex history and extremely complex networks of power that crisscross the state, society and the private sector that can only be sufficiently understood through a much more thorough understanding of the country's politics. The level of knowledge of Ethiopian politics that I possess at this point in time does not qualify me in being a key participant in internal Ethiopian political debates. All of this meant that I at least make use of some elements of the political settlements theory to enrich and sharpen a particular dimension of the Ethiopian political economy analysis without pushing it to the fore or moving too much into a complex terrain.

3.5.3 Interpretation of findings and dealing with interpretation bias

The nature of the research in this study is exploratory, investigative and interpretive. It involves discourse analysis, through inductive interpretation, engaging, analyzing and extrapolating insights, to deconstruct the meaning of interviews, policy documents and archival material. I conducted the case-study research with the consciousness that my own interpretation would emerge in a subject area where different perceptions on the performance of the Ethiopian developmental state abound, including that of key state-owned enterprises like METEC. O'Laughlin (2007) provides some key suggestions on how go about challenging existing interpretations of existing data that may seemingly, according to the researcher's hypothesis, warrant reinvestigation from a different theoretical or methodological perspective.

The iterative process, as suggested by O'Laughlin, took the following approach: identifying and rethinking assumptions; formulating alternative questions and extending the range of possible answers; reading both sides of key debates; confronting the data and asking how well it answers old and new questions; rethink the conclusions; and rethink the audience. Part of the exercise, as I was reviewing the literature, framing the questions for interviews, conducting the actual interviews and subsequently sitting with the data as I analyzed it meant that I ask myself a number of questions in relation to already existing research: what exactly is it that other researchers have found that I would like to test, verify or dispute, what emerging lessons was I teasing out from the various thematic foci that were the contradictory to existing findings? How best can I engage with arguments from the 'other side' that had been neglected by existing research? Could there possibly be different interpretations of the outcomes arising from the original data collected than what we already know? This reflection itself was an inductive exercise that involved a 'funneling', which entails a narrowing, yet also at the same time a deepening process and it helped me sharpen my questions as well as point out the limitations of the existing literature.

The implication in adopting an interpretive method is that interpretation biases may arise. One of the reasons that make qualitative research to be so challenging is the likelihood of interviewees reproducing their own biases. As a researcher, one needs to be well-prepared and well-immersed into existing literature and debates to deal this problem. Due to the political nature and sensitivity of the topic, I first had to be cautious of certain ideological biases held by different groups of participants for instance, which depended on a number of factors, including their political affiliation, ethnicity, etc. which could be very well reproduced in their interview responses. There are many and varied views that are held by society and private sector business about the state of affairs METEC and those at the helm of the corporation. It is particularly important to note that there is a common belief that METEC is mostly built along ethnic lines. In a society that is already ethnically divided this presents its own set of challenges as some of the participants views reflected ethnic biases. This in turn meant that I should apply a level of caution when I was analyzing and interpreting some of the interview data. The strong views expressed by those who criticize the regime and its approach to development were also encountered in the media, scholarly as well as analytical writing in strikingly similar ways to what Booth and Golooba-Mutebi (2012:284) describe as exceptionally polarized.

To avoid the trap of being pigeonholed into the binary categories of being seen as either an apologist on behalf of or a slasher of the Ethiopian regime, I had to put aside my own naivety, ideological leanings and subjectivity in my analysis. The danger with excessive subjectivity in the particular case of my study is that it potentially opens the door of vulnerability with regards to accusations of sympathizing with, rationalizing or even legitimizing what may otherwise seem indefensible from another perspective. However, some elements of subjectivity, which introduce their own interpretation biases, cannot be totally eliminated. The best way, therefore, to deal with subjectivity, so much that it has little a bearing as possible, is to ground the interpretation of the findings in the theoretical insights found in the analytical framework as best as possible. Even so, choosing a particular method or body of literature to constitute the analytical framework, thus prioritizing a particular understanding or perspective over others, somewhat involves a bias of its own due to a spotlight being cast into one particular direction.

In addition to the interviews, I soon established that there were credible and less partisan media sources such as The Reporter, Addis Fortune, The Ethiopian Herald, and Capital whose reporting is not as sensational or partisan in nature, as are the Tigrai Online or Ethiopia Insight, for example. The major limitation, as pointed out by O'Laughlin (2007: 154), in using sources such as grey material is that because much of it "is not based on new surveys or independent research – data are found and made to speak". Whilst "there is nothing wrong with this in itself but it means that we must be particularly careful about verifying interpretations". Apart from the conscious decision of relying more on media sources in the former category for information, here too I also had to sift through the media reporting with careful discernment; understanding the context in which the information was presented, differentiating between biases, noise and facts. This involved, for instance, making a distinction and discerning when a news article is approaching a particular issue from a serious investigative point of view and reporting on claims that can either be validated or invalidated via interviews or when it looked more like an image saving public relations exercise or yet completely scurrilous claims which circulate as street or internet gossip in Addis Ababa.

3.6 Ethical considerations

An ethical clearance certificate was obtained from the University of the Witwatersrand before data collection could commence for this study (see ethical clearance certificate in appendix 3.4).

Due to the bureaucratic processes involved in obtaining formal permission, not all permission could be obtained through a permission letter, but was in some was given verbally. Due to the sensitive nature of the topic and subject matter, interview participants were promised anonymity, unless otherwise agreed upon. Codes have been used in place of actual names. In some cases, however, it has proved difficult to totally disguise participants due to the generally recognizable positions they hold. Company names are mentioned, but only in so far as descriptions of their technological capabilities are involved. The interview notes, transcripts, recordings will be kept confidentially.

Chapter 4

Contextualizing the Metals and Engineering Sector Within Ethiopian Industrial Policy

4.1 Introduction

The chapter constitutes the first step of examining the historical dynamics of Ethiopian industrial policy and how the metals and engineering sector fits within the broader industrial policy landscape before going into empirical evidence. Section 4.2 begins by looking at post-1991 developments and the set of reforms that have followed, including the early implementation of industrial policy with its focus on transforming the agricultural sector and the subsequent focus on labour-intensive and export-focused sectors. The myriad of policy frameworks that have been adopted over the years are discussed, including the Agricultural Development-Led Industrial (ADLI) policy, the Industrial Development Strategy (IDS) and the Growth and Transformation Plans I and II. The incentives and compulsions for the developmental state dimension in Ethiopian economic policy and the extent to which it relates to former Prime Minister Zenawi's vision for Ethiopia's development is outlined. Throughout the chapter is also a discussion of the contradictions of capital ownership and the associated contestations which have shaped the political economy environment over the last three decades.

Section 4.3 pays special attention to the metals and engineering sector and its role Ethiopian industrialization. Section 4.4 looks at the key institutions aimed at supporting the development of the sector are outlined. The chapter ends off with section 4.5 with a presentation of some of the historical elements of METEC and a discussion of the motivations behind the corporation's establishment and its central place in Ethiopia's mega-projects.

4.2 Ethiopian Industrial Policy: 1991 to present

4.2.1 Transition from Command Economy to Market-Based Economy

After almost two decades of military rule (1974 -1987), the Derg military regime under the leadership of Mengistu Haile Mariam was overthrown and replaced by the People's Democratic Republic of Ethiopia. The Transitional Government of Ethiopia (TGE) was formed in 1991 and

was controlled by the Ethiopian People's Revolutionary Democratic Front (EPRDF). Since then (until 2019 when the EPRDF was dissolved), Ethiopia has been governed by the EPRDF through an ethnicity-based federalism system that endows regional autonomy and shared governance was established as viable a formula of power brokering among different political parties and as a means to accommodate competing interests of diverse ethnic and linguistic groups (Bekele, Kjosavik, and Shanmugaratnam, 2016; van Veen, 2016).

At the center of the EPRDF was the Tigray People's Liberation Front (TPLF), which is the Party of Meles Zenawi (Prime Minister of Ethiopia until his death in 2012) that had played a leading role in overthrowing the Derg and whose elites are predominantly of the Tigrayan ethnic group and constitutes a minority population that accounts for about 6% of the Ethiopian population. Surrounding the TPLF was the co-optation of satellite political parties from other ethnic groups from the other three regions, amongst which include the Oromia's Peoples Democratic Organisation (OPDO) which represents a majority ethnic group, the Oromo's; the Amhara Democratic Party (formerly known as the Amhara National Democratic Movement or ANDM) and the Southern Nations, Nationalities and People's Regional Party (SNNRP), which is the party of the former Prime Minister Hailemarian Desalegn and is the weakest of the four main regions (Lavers, 2019). This political system has promoted the persistence of ethnic allegiances as the most dominant medium for organizing collective action, and excluded the possibility for competing forms of political identity to exist. All other opposition parties were excluded and, therefore, extremely weak in terms of political influence (Admassie, Berhanu, and Admasie (2016)).

Under the Derg military regime state-owned enterprises (SOEs) had been at the commanding heights of the economy under a planned socialist economy and they commanded more than 95% of economic activity. The Transitional Government of Ethiopia set out to implement a number of reforms that would set Ethiopia on a path of recovery, rehabilitation and revitalization. Many SOEs were put up for privatisation and the private sector was allowed to be the main industrial actor in a number of areas including agriculture, manufacturing, services and construction. Yet, after all the reforms, the involvement of SOEs in key areas of the Ethiopian economy still remained substantial and have, for a long time, been a source of constant frustration for many economists and international finance institutions (IFIs) such as the World Bank (WB) who have

lamented the minimal role the private sector (World Bank, 2009). Privatisation has also been criticized for being lacklustre, exclusive of certain strategic sectors in manufacturing, finance, utilities and infrastructure as generally slow in its pace (Altenburg, 2010). Throughout the years, the Ethiopian government has been vehemently criticised as business unfriendly and doubts have persisted over the government's real commitment to the transition to a liberal economy (Vaughan and Gebremichael; 2011). For Oqubay (2015), however, the privatization project strategy has been a subject of much debate within the government and is necessarily designed so as to carefully diverge from IFI prescriptions.

The mid-90s saw the emergence of four party-owned conglomerates which emanated from the endowment funds of each of the federated states. The four endowment companies are associated with the dominant parties in the four respective regions are: Endowment for the Rehabilitation of Tigray (EFFORT) in Tigray region; Tiret or the Endeavour in Amhara; Tumsa in Oromia and; Wendo in the Southern Nations, Nationalities and Peoples' Regional State (SNNPRS). Within this group, EFFORT is the most powerful. The regional endowment fund conglomerates are another source of controversy, because of what is considered to be their ethnic profile, with each dedicated to the particular interests of a particular federated state. Their close operational links with the government has also raised a number of questions on their status as proxies of the state or as instruments for the personal enrichment of political elites (Vaughan and Gebremichael, 2011; van Veen, 2016).[9]

Mesfin Industrial Engineering (MIE) is, for example, one of the subsidiary companies of the TPLF-owned EFFORT business group. MIE's roots can be traced to the TPLF-owned Trans-Ethiopia Company (also known as TESCO), which was formed by the TPLF's rebel force in the late 1980s during the time in which it was fighting to overthrow the Derg. Originally TESCO had garage facilities and workshops in Sudan where officers were involved in the maintenance and repairs of the truck fleet (See Image 4.1 below). Mesfin Industrial Engineering emerged as an offshoot of TESCO from these humanitarian operations and projects, with the realization that

[9] Over the years, there has been a general dissatisfaction with the dominance of the Tigrayans and their EFFORT fund, which seemingly dominates private-sector manufacturing and yet the people belonging to this ethnic group are a minority of the population. This dominance, despite Tigrayans being a minority group, has always begged the question of the viability and sustained survival of this kind of political model in Ethiopia.

there were metals and engineering capabilities that had been built by TESCO in its workshop facilities that could go on to be a useful springboard in starting up a domestic company that would replace the purchase of equipment and cargo trucks to making them locally (interview reference: AEP-PEE-2). At some point in the mid-1990s TESCO controlled about 35% of the Ethiopian freight market as a truck fleet company (Demissie, 2008). The TPLF is said to always have had the grand vision of a future state-owned conglomerate in the metals and engineering sector, which would carry forward the responsibility of shifting Ethiopia from the manufacture of simple cargo and vehicle bodies and capital equipment spare parts towards engineering, manufacturing and erecting the actual production lines, equipment and structures for sugar factories, fertilizer plants, vehicle assembly and other manufacturing plants. It is in this light that Mesfin industrial Engineering can be seen as one of the key pioneers in the sector as well as an important precursor to the powerful state-owned enterprise, the Metals and Engineering Corporation (METEC), which is discussed below in section 4.5 below (interview reference: AEP-PEE-2).

Image 4.1: TPLF soldiers working on maintenance and repairs in a garage facility in "the bush" in the 1980s



Source: captured by author at the Meles Zenawi Foundation (28/10/2018)

4.2.2 The Agricultural Development Led Industrialization (ADLI) Strategy

The Agricultural Development Led Industrialization (ADLI) strategy was adopted in 1994 as Ethiopia's official industrial policy strategy aimed as both a growth strategy and a redistributive vehicle to empower the millions of poor peasants who had suffered under feudal rule and the failed socialist experiment of the military regime in the 1970s and 1980s (Cheru, Cramer and Oqubay, 2020). ADLI set out to use agriculture for the initial take-off of industrialization (Oqubay, 2015). The strategy had an export orientation promoted agriculture as a primary stimulus to generate increased output, employment, and income for the people and as a springboard for the development of other sectors of the economy (Fenta, 2014). It mainly favoured rural development since its aim was to alleviate poverty in the country side where more than 80% of the Ethiopian people live (Oqubay, 2015). The initial foci of industrial policy may also be explained by the government's need to deal with unemployment in a context of massive and growing population. Ethiopia's population, which is the second largest on the continent after Nigeria, skyrocketed by 47% between 2000 and 2014 (Priewe, 2016). The industrial policy imperative became more pronounced with the realisation from Ethiopian policymakers that if there wasn't any structural change and job creation the population growth, in country with already the second largest population on the African continent, would soon enough present problems of social unrest and political instability for the country (Oqubay, 2015).

The Industrial Development Strategy of Ethiopia (IDSE) was implemented in the year 2000 with a specific focus on the promotion and expansion of selected sectors, which were regarded as strategic due to their backward and forward linkages to the agricultural sector, labour intensiveness, and export propensities. These sectors include textiles, wearing apparel, leather and leather products and footwear (Gebreeyesus, 2014; Oqubay, 2015). Following an acknowledgement of ADLI's limitations in transforming agriculture and bringing about value addition in agricultural products, the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) a 5-year plan that was implemented between 2005-2010 under the IDSE "aimed at moving Ethiopia from dependence on subsistence agriculture towards industrialization and the export of value-added products under the guidance of a strong and development-oriented state" (Cheru, Cramer and Oqubay, 2020:11).

The annual growth rate of the industrial sector almost doubled from 10.1 to 19.8 during the PASDEP period. The overall contribution of the manufacturing and industrial sectors to annual

GDP growth rate was 0.4 and 1.1 percent respectively during PASDEP (Oqubay, 2018). Despite the boost in economic growth (which annually averaged 11% between 2004 and 2011, almost double the SSA average during the same period), as well as increases in export volumes (share of exports increased from 3% of GDP in 1992 to 17% in 2011), Ethiopia's pattern of industrialization still entailed some significant vulnerabilities as the export and sectoral composition has experienced only minor shifts towards manufacturing. The majority of industries still remain labour intensive, manufacturing low-value products (Oqubay, 2015; Oqubay, 2018). More specifically, the composition of the manufacturing industry would largely remain limited to simple agro-processing (grain milling, edible oil production, leather tanning, and production of basic consumer goods, beer, footwear, textiles and garment and dominated by small and micro-firms (Fenta, 2014; Gebreeyesus, 2014).

According to Fenta (2014), over the 20 years leading up to 2009/10, the number of enterprises has grown 15-fold, employment generated by private manufacturing leaped up 34 times, while fixed assets and gross value of production boosted up 513 times and 172 times respectively. Some commentators, however, are not impressed with the levels of public investment that are still relatively high and see this as a crowding out the private sector and at odds with the pronouncement of a private-sector led economy in the Industrial Development Strategy. Seemingly, despite some practical commitment to privatization, market-orientation and the pronouncement that it is private firms, and not state-owned enterprises that must be the engine of production and investment, the involvement of domestic private-owned enterprises as the viable path to transition to capitalism and a competitive liberal democracy remains worryingly low for some observers (Vaughan and Gebremichael, 2011).

4.2.3 Developmental state ideology

From early on, the EPRDF government has, from time to time, expressesed its dissatisfaction with some sections of domestic capital; the latter seen as having rent-seeking tendencies. The Ethiopian private sector has, therefore, not always been seen by the EPRDF as its natural ally within the broader project of revolutionary democracy. The rhetoric of the government is that the majority of actors in the private sector are rent-seekers who are focused on benefiting illegally or immorally from public resources, while there are much fewer "developmental capitalists" who are focused on value-creation and the promotion of sustainable growth (Vaughan and

Gebremichael, 2011). In the early 2000s the Ethiopian state began a transition and shift in ideological position from revolutionary democracy to claiming a democratic developmental state (Oqubay, 2015). Within the EPRDF "elite consensus was reached sticking to path laid down by Zenawi" (Lavers, 2019:653). It is through this agency that Meles Zenawi achieved the acceptability of the developmental state model in the party. Meles Zenawi was inspired by East Asia and set to emulate the East Asian tigers as role models in his conception of the Ethiopian developmental state. Meles Zenawi's own definition of the Ethiopian development model was that "essentially, the concept hangs on the prudent combination of market forces and state intervention, where the state plays a leading role not only in providing infrastructure and basic services, but also in providing the right conducive environment for the development of productive and manufacturing capacities. For sure, the experience of a number of East Asian countries supports the validity of our approach (New African, 2011:2). For Zenawi the developmental state should be obsessed with value creation, making accelerated and broad-based growth a matter of national survival (De Waal, 2013:153).

The period following 2005 was yet another turning point for both the Ethiopian economy and the political climate. During the 2005 elections, which led to the defeat of the EPRDF in Addis Ababa, the domestic private sector is said to have expressed its dissatisfaction with the government about the latter's preference for narrow capitalist interests over the broader interests of the private sector as a whole. Both the Ethiopian urban middle class and private sector largely rallied behind what appears to be a more business friendly opposition. As a result, the relationship between the state and business, especially in the urban areas, became more fractious than before as the government retaliated by singling out the majority of the private sector actors as rent-seekers, which put the relations further on ice. The political space also shrunk and became so narrow that opposition parties and civil society movements had almost no voice at all (Vaughan and Gebremichael, 2011).

The EPRDF often defended its position by claiming that the reason for holding back on a full transition to a liberal democracy and market economy is due to Ethiopia still having strong elements of a pre-capitalist economy that suffers from the absence of an educated, strong, broad-based and representative middle-class that is capable and motivated to protect its economic interests and assets (Vaughan and Gebremichael, 2011). Oqubay (2015) has also argued that the

private sector in Ethiopia has in the past demonstrated a tendency to focus on short-termism and on the temptations of engaging in speculative activities, rather than productive sectors, as well as to prefer light industry over riskier manufacturing activities and heavy industry. Making an example of the cement sector, Oqubay (2015) asserts that despite, for instance, the prompts and hints given by the industrial strategy that favoured large-scale infrastructure, and by the growth of the construction sector, the private sector dragged its' feet and did not invest for a long time. The overall nature of a private sector is still characterized as being more prone to investing in the services sector and trading activities. Relative to the manufacturing sector, the aforementioned sectors are arguably easier and faster sources of accumulation. Indeed, the challenge in low or middle-income countries has been the flow of capital into the finance, insurance and real estate (FIRE) or trade-related activities, due to the lucrative returns in these industries, as opposed to productive sectors, such as manufacturing, where the risks are high and returns are not guaranteed (UNDP, 2017). Despite subsequent attempts by the government to win over the private sector, animosity between the two still somewhat remains, and the heightened tensions in the country around expectations of rent creation and appropriation remain unresolved (Vaughan and Gebremichael, 2011).

On the other hand is the question of the endowment (party-owned firms) and their close links with the government. They remained frowned upon and are not necessarily perceived as belonging to the main Ethiopian private sector, but as part of a 'second' and parallel private sector that supposedly crowds out the private sector. They are often accused of being exclusively motivated by corruption due to a cosy relationship with the government and association with senior EPRDF government politicians who are closely involved in the endowment-company corporate policy making (Altenburg, 2010; van Veen, 2016). Members of the international community and in academic circles, thus, believe that all endowment-owned companies enjoy uniformly privileged access to credit, land, information and contracts as a result of political connections (Altenburg, 2010).

Weis (2016) has characterised Ethiopia's developmental mode with its strong links between politics and business as 'vanguard capitalism' and found it to be developmental in so far as it has fostered economic growth since the early 2000s. Vaughan and Gebremichael (2014) have considered the role of the party-owned enterprises in light of 'developmental patrimonialism'; a

concept coined by Africa, Power and Politics (APP), which suggests that Ethiopia is consistent with a kind of patrimonialism is conducive to transformational economic growth. Some of the important contributions of endowment firms have also been pointed out by Oqubay (2015), especially with respect to areas of economic activity where the Ethiopian private sector has previously not taken a keen interest in investing due to the insurmountable risks and uncertainty. Apart from being pioneers in economic transformation and employment creation in several sectors including breweries, cement and agro-processing, Oqubay (2015) argues that endowment firms have demonstrated an important role in shaping Ethiopia's industrial policy.

Like party-owned firms, state-owned enterprises have been engaged by the state in the economy and infrastructural projects quite significantly. They have, however, attracted criticism due to widespread perceptions that it crowed out the private sector by competing with it, getting preferential treatment from the state for contracts but also not affected by constraints that private firms such as tax administration, customs and trade regulations, access to land, cost of finance, and corruption. SOEs in general supposedly benefit the selfish interests of bureaucratic government officials and ruling elites and do not necessarily create linkages with small businesses (Fenta, 2014; IMF, 2015). Other criticisms levelled against SOEs are that they are inefficient, lethargic, passive and burdensome beasts with marginal contribution to industrialization that go against the grain of competition and innovation fundamental to a market economy. From the states' perspective the state, state-owned enterprises hold a central place in Ethiopian industrial policy as both arms of manufacturing and important players in policymaking (Oqubay, 2015). Oqubay (2015) has argued that the state is engaging in areas where the private sector has less interest to invest in. They have arguably also shown significant leapfrogging in the past couple of years, and in the process, shown efforts of generating new technologies and building efficient local capacities in terms of human resource and logistics. In addition, Oqubay (2015) argues that despite neopatrimonial assumptions, the state owned enterprises have not necessarily nurtured or uniformly nurtured predatory groups and clients.

4.2.4 Growth and Transformation Plan (I and II)

The Growth and Transformation Plan (GTP I), a five-year plan implemented between 2010 and 2015 with the aim of spurring economic structural transformation and accelerating economic growth, managed to sustain double-digit growth leading to poverty reduction and other

developmental goals. During GTP I the government prioritized a few industries to lead its ambitious industrialization agenda, namely, textile and garments, and leather products industries. These sectors are prioritized because of their expected linkages with the agricultural sector and the desire to exploit the country's potential comparative advantage in labour intensive products. These priority industries are expected to be exported-oriented in order to generate the financial resources needed for capacity expansion in other manufacturing industries. The Ethiopian export sector has not been growing as expected. The country has not yet tapped into its competitive advantage in textile and garments, which at the moment are contributing very little to total exports. Therefore, it is evident that the strong growth in export earnings in Ethiopia since 2005 is a result of non-traditional agricultural exports. Key among the latter is the horticultural sector, which has experienced a 49% annual growth during the period 1995-2014. The remainder of the increase in non-coffee agricultural exports comes from traditional agricultural items that experienced faster growth since 2005 (see Table 4.1 below for a summary of key indicators).

The second phase of the Growth and Transformation Plan, GTP II spanned between 2015 and 2020. It envisioned the escalation of Ethiopia to the status of a middle-income country by 2025. GTP II recognizes that the likelihood of Ethiopian attaining middle-income status depends on a surge in industrialization and structural transformation as well as the country's industrial policy moving into higher gear. The untransformed industrial structure of the manufacturing sector means that basic and capital goods demanded by all other sectors of the economy (agriculture, mining, transport, communication, construction, etc.) cannot be produced and supplied by the Ethiopian manufacturing sector. An imbalance in forward and backward linkages between economic sectors means structural dependency on the external economy for capital-intensive, technology-intensive and high-tech goods, since Ethiopia is still heavily dependent on imports, not only for capital and intermediate goods, but also for consumption goods.

Table 4.1: Summary of Key Economic Indicators

1) Annual Growth Rate of Output (%)			
	2005/06 – 2009/10 PASDEP	2010/11 – 2014/15 GTP I	2015/16 – 16/17
Manufacturing	10.0	15.1	17.9
Construction	11.1	27.7	22.85
Industry	10.1	19.8	19.65
GDP	11.0	10.1	9.45
2) Contribution to Annual GDP Growth Rate (% of total)			
Manufacturing	0.4	0.6	1
Industry	1.1	2.3	3.1
GDP	11	10.1	9.45
3) Exports, Imports (% GDP			
Exports –Total (% of GDP)	12.5	12.8	7.8
Imports – Total (% of GDP)	32.5	30.3	25.75
	2014/15	2015/16	2016/17
Manufacturing Exports (of GDP)	0.6	0.5	0.5
Merchandise Exports (of GDP)	4.7	4	3.6
4) Employment Annual Growth Rate (%)			
	1998- 2005	2005 - 2013	1998 - 2013
Manufacturing	5.4	3.0	4.8
5) Sectoral Employment (% of Total)			
	1998	2005	2013
Manufacturing	4.4	4.9	4.5

Source: Oqubay (2018)

Table 4.2: Evolution of Ethiopian Economic Policy Reforms Since 1991

Period	**Reforms**	**Policy**	**Targeted manufacturing sectors**
1991 – 2000	Transition from command economy to market-based economic	Laying down of foundations of market economy, privatization programme Agricultural development-led Industrialization (ADLI) since 1994	Recovery, rehabilitation and revitalisation of infrastructure, basic services and agriculture
2000 – 2010	Developmental state	Industrial Development Strategy of Ethiopia (IDSE) since 2000 5-year development plan – Sustainable Development and Poverty Reduction Program (2002-2005) 5-year development plan – Plan for Accelerated and Sustained Development to End Poverty (2005-2010)	Export-oriented, agriculture-led, focused on employment generation through labour-intensive sectors such as garments and textiles, agro-processing, meat-processing, leather and leather products and construction.
2010 - 2020	Spur economic structural transformation, sustained accelerated growth and strengthen developmental state	Growth and Transformation Plan I and II	Textiles and garments, leather and leather products, sugar and sugar-related products, cement, chemicals and development of domestic engineering and fabrication capacity

Source: own formulation based on Oqubay (2015); GTP I and II

4.2.5 Industrial parks

Industrial parks are an important feature of Ethiopian industrialization and efforts by the government to attract foreign direct investment (FDI) into Ethiopia. FDI inflows have generally remained exceptionally low and only started to improve after 2008/9 (Vaughan & Gebremichael, 2011). Even so, by 2011/2012 approximately only 4 percent of firms in Ethiopia were private and foreign owned (Gebreeyesus, 2014). The limited presence of foreign owned firms in the

Ethiopian manufacturing sector has been due to high levels of perceived risk of doing business in the horn of Africa (Gebreeyesus, 2014). The Ethiopian government has been actively attracting FDI through the marketing efforts of the Ethiopian Investment Commission (EIC) and this has yielded inflows in some sectors, especially from China where Chinese firms seem to be investing in the construction and manufacturing sectors (McKinsey, 2017; Oya, 2019).

Ethiopia's industrial parks have received priority attention from the government. With the incentives provided by the government, coupled with the financing from China, Ethiopia is now known for being hyped as the special economic zone success story in Africa. Key infrastructural developments, such as the Chinese-built rail-link to the harbour in Djibouti, being centred on the support of exporting firms to cement the position of Ethiopia as a manufacturing and assembly sector in Africa. The Industrial Parks Development Corporation is involved in the coordination, planning and implementation of the various industrial parks which have different sectorial focuses including garment, textiles, apparel, food-processing, pharmaceuticals and other areas such as vehicles assembly and machineries (Table 4.3). A total of 11 government-owned industrial parks have been planned, with a number of them already completed and currently operational, however, some of the industrial parks still have major infrastructural gaps with sheds not yet developed and are, thus, not yet operational.

The industrial parks have been designed such that they have one-stop shop services available to ease customs, tax, commodity inspection, as well as inspections of the imported and exported goods. Companies within the parks are eligible for corporate income tax exemptions of between 4 and 10 years as well as no taxes on exports. They also enjoy 40% foreign currency reserves, a rate which is 10% higher than what is applicable to outside enterprises. Raw inputs for exported goods also enjoy duty-free privileges (Ethiopian Investment Commission, 2016; n.d). Whilst the iindustrial parks have contributed to job creation, they have not managed to promote sufficient production linkages from the interaction between domestic and foreign firms and learning for domestic firms has failed to instantly materialize (Oqubay, 2018; Gebremariam and Feyisa, 2019). Challenges that often face firms in the industrial parks generally include the lack of supply of well-trained and skilled labour, shortages of raw materials or semi-finished materials for inputs, trade-related bottlenecks, and inefficiencies in a number of areas including banking

and finance, port operations as well as the institutional, regulatory and administrative incompetence of industrial park management (Gebremariam and Feyisa, 2019).

The Adama Industrial Park is quite unique from the others in that it encompasses the production of heavy machinery and parts, such as bulldozers, excavation equipment, transformers, agricultural machinery, concrete machinery, excavators, hoisting machinery, road machinery, and includes both huge Chinese manufacturers and local investors. Some of the Chinese firms that have already made investments and investment commitments include TBEA, SANY Heavy Industry Co, FOTON and the Hunan Changgao Electric Group. Like all other industrial parks, Adama Industrial Park is fully supplied with the entire necessary infrastructure, energy and all the necessary business facilitation units that are needed to create an area with an agglomeration of companies that are well serviced. The Hunan Province in China, known for its speciality as a machinery producer has plans to promote the relocation of its equipment manufacturing capacity in engineering and machinery industry, iron and steel industry and the exploitation of energy resources, through outbound investment and overseas project contracting (Mehandis, 2016; Further Africa, 2019).

Table 4.3: Industrial Parks in Ethiopia

Name of Park	**Location**	**Eligible sectors**	**Status**
Bole Lemi I	Addis Ababa	Apparel	Operational
Bole Lemi II	Addis Ababa	Textile and Apparel	Under construction
Kilinto	Addis Ababa	Pharmaceutical	Under construction
Hawassa	Hawassa	Textile and Garment	Operational
Adama	Adama	Textile, Garment and Machinery	Under construction
Dire Dawa	Dire Dawa	Garment, Apparel, Textile & Food Processing	Under construction
Mekelle	Mekelle	Apparel, Textile & Food Processing	Operational
Kombolcha	Kombolcha	Apparel, Textile & Food Processing	Operational
Jimma	Jimma	Apparel, Textile & Food Processing	Under construction
Bahir-Dar	Bahir-Dar	Apparel, Textile & Food Processing	Under construction
Debre-Birhan	Debre-Birhan	Garment, Apparel & Food Processing	Under construction

Source: Industrial Parks Development Corporation, 2018

A closer look into the way in which both the private and government industrial parks have, for instance, been developed demonstrates some missed opportunities for the development of domestic engineering and fabrication capabilities. A Senior Director of Technology Transfer and Development in the Ministry of Science and Technology (interview reference: GB-MoST-1) pointed out how the Eastern Industrial Zone (EIZ), an industrial park privately-owned by the Chinese investor Qiyuan group and located on the outskirts of Addis Ababa, contributed very little the promotion of the domestic sector since almost all the construction inputs were imported. The Eastern Industrial Zone is a high technology facility that was launched in 2009 and houses 27 Chinese factories that specialize in, for example, shoe production, automotive assembly, steel-making and clothing assembly is a high technology facility and was built through the China-Africa Development Fund as part of 'China Goes Global Policy' (Oqubay, 2015; UNDP, 2015). The Senior Director of Technology Transfer and Development in the MoST (interview reference: BB-MosT1) mentioned how it was constructed at such an incredible pace that the space for cooperation between the contractors and domestic firms was not prioritized. In addition, whilst the industrial zone does currently generate foreign currency and employment opportunities for Ethiopians, there is currently no technology transfer happening between firms operating inside and domestic firms outside simply because the industrial park system was not designed with a view of achieving this.

With respect to the construction of the government-owned industrial parks, the government has had a bias that favours Chinese engineering contractors for their construction. The construction of the Hawassa Industrial Park, for example, for an estimated $246 million, was wholly awarded exclusively to the China Civil Engineering Cooperation by the Industrial Parks Development Corporation (IPDC) in 2015 with one local firm as a consultant on the project (Fortune, 2015). The IPDC did, however, make some attempts to include and engage domestic contractors in, for instance, the first phase (2010-2015) of construction of the Bole Lemi Industrial Park where over 20 contractors, both domestic and international where involved in. Due to significant delays, the five-year timeframe to complete the industrial park was not met. From then, the government took the decision to award all future industrial park projects on a turnkey basis from design right up to construction stage. Under this arrangement contractors needed to come with their own source of financing, without requiring assistance opening letters of credit for procurement. Most domestic

contractors were, by default, eliminated from the bidding process due to finance constraints and lack of exposure to contracts of industrial park scale. Accordingly, when the government released the tender for the Adama Industrial Park at the beginning of 2016, domestic firms were excluded on the basis that they did not meet the requirement of the tender due to inexperience (Fortune, 2016).

4.3 The Metals and Engineering Sector

Under GTP II, the government added a few import-substituting sectors, including metals and engineering and chemicals, in the high priority list as a reaction to the growing import dependence of the country. The government was also motivated by the sector's backward linkages with the mining sector and forward linkages with other engineering industries as well as projects in railway, construction and electricity networking. Although the metals and engineering sector was added much later to the list of priority sectors it was part of ambitious plans that emerged much earlier primarily out of joint government-donor consultancy work in bilateral policy dialogues between the Ethiopian government and a Japanese team of experts as well as the state's intention to build on prior manufacturing experience that had been accumulated over the years leading up to the 2000s. The trigger that initiated much of the developments to come in the metals and engineering sector was a request from the Ethiopian Government to the Japan International Cooperation Agency (JICA) to assist in conducting the BMEI Firm-level Study, in conjunction with the government-run Metal Products Development Center (MPDC) under the Ministry of Trade and Industry (MOTI) and the German-supported Engineering Capacity Building Programme (ECBP) (JICA, 2010).

According to a Senior Expert in Kaizen programmes at JICA, this survey, which was carried out throughout the first half of 2010 produced several recommendations, including the proper sequencing of development from downstream to upstream, re-examination of feasibility of Bikilal ore mining, identification of locally substitutable metal products, and capacity building using Kaizen (interview reference: IO-JICA-1**)**. As the metals and engineering sectors was a model case of a specific sub-sector in the Industrial Policy Dialogue program, it was featured twice in the series of the High Level Forums (HLFs) as inputs for the formulation of A Plan for

Accelerated and Sustained Development to End Poverty (PASDEP). Overall, the deliberations, analysis and plans are enveloped in different strategy documents, which include: (i) the Basic Metal and Engineering Industry Development Strategy and Action Plan (BMEI Strategy) drafted by MPDC/MOTI in 2008; (ii) the Metal and Engineering Industries Sub-sector 5-Year Development Plan 2010/11-2014/15 (BMEI 5-Year Plan) prepared by MPDC/MOTI in May 2010; and (iii) JICA's Basic Metal and Engineering Industries Firm-level 2010 study.

The Ethiopian Development Strategy Roadmap (2013) sets out on an ambitious task that envisions a transfer from light to heavy manufacturing by 2025. The metals and engineering sector, ties together with the chemicals sector as the second highest sector that is targeted by the government to contribute the most to the manufacturing share by 2025. The Roadmap envisions the emergence of new key industries and the building up of high-technology industry in the second phase (2016-2025) and third phase (2021 -2025), respectively. Under the third phase, the plan is for the newly built metal and chemical industries to further expand and build their capacity in preparation for the emergence of high-tech industries during the same phase. While the significant percent of the manufacturing sector is set to remain in light industries during all phases; the % share of metal and chemical industries and high tech industries is, however, planned to gradually increase up to the vision period 2025.

By the end of 2025 the plan is for the industrial structure to show significant structural change and consist of more than 50% of medium and high-tech industry. To make this happen, the Ethiopian government has identified a number of top priority projects for investment in the Ethiopian Industrial Development Strategic Plan (2013-2025). The Ethiopian Industrial Development Strategic Plan, which is complemented by the Industrial Development Roadmap, has a substantial planned budget allocation for the development of at least three projects for the manufacturing of machineries, machine parts, components and a machine production plant, for various projects amongst plants for other sectors (Table 4.4).

Table 4.4: Top priority manufacturing and industrial projects in metals and engineering sector (2013-2016)

Selected projects in metals and engineering industry		
Project	**Number of plants**	**Estimated Finance (in million birr)**
Industrial complex for the manufacturing of agriculture and agro-processing machine parts and machineries production plant	3	6,000
Manufacturing machine parts and machineries production plant	3	3,000
Manufacturing of construction machinery (railway and building) and other components	2	6,000

Source: Ethiopian Industrial Development Plan (2013)

The GTP II places emphasis on the creation of linkages between local and foreign enterprises to facilitate knowledge and technology transfer to ensure sustainability of growth. Consistent with the projects identified in the Industrial Development Strategic Plan, a significant portion of GTP off-budget spending has been allocated directly to METEC itself, private enterprises, as well as industrial and infrastructural projects that, in one way or another, are involved equipment production and metals and engineering services (Table 4.4). The business beneficiaries in these projects, according to the plan, would constitute of both foreign and domestic contractors.

Ethiopia's metal and engineering industry is still in its infancy and plays a limited role in terms of direct contribution to the Ethiopian manufacturing sector, even though there has been incremental expansion over the last few years. Data from Ethiopian Investment Commission (Table 4.6) displays a rise in the number and capital expenditures of private investment projects in both pre-implementation and implementation phase in the period between 1992 and 2017. According to Dametew, Kitaw and Ebinger (2017) the competitive performance of Ethiopia's basic metals sector is poor. It is, therefore, expected that the sector will gain its domestic competitiveness as it continues to support activity in all other sub-sectors of manufacturing. In the short to medium term, the growth and health of the metals and engineering sectors is intimately tied up with and, therefore, depends on the overall growth in manufacturing in the local economy.

The main challenges faced by the sector include the lack of access to finance, land, infrastructure and energy supply, raw materials, technological constraints and limitations in production capacity. Other challenges pertaining to developing the sector are related to the limits in the production of engineering skills and technical capabilities; input costs and the inability to meet customer requirements, struggle with quality accreditation, testing and certification; limited efforts by the government to develop local clusters with shared services, local R&D facilities and provide appropriate training at tertiary institutions (Dametew, Kitaw, Ebinger, 2017; Gebreeyesus, 2014).

Table 4.5: GTP Off-Budget Spending on Infrastructure and Industrial Projects

GTP off-Budget spending on Infrastructure and Industrial Projects – Ranked by Value			
Sector/Sub-sector	**Birr Millions**	**Business Beneficiaries**	**Foreign or domestic**
Energy	177, 735	Salini for Grand Ethiopian Renaissance Dam; cement companies, hydro plant equipment producers	Mainly foreign, some domestic
Railways	110, 796	China Railway group ($1.6 bn ; OIA (India); local contractors, METEC	Mainly foreign, some domestic
Sugar	73, 575	Sugar plant equipment producers	Mainly foreign, some domestic
Chemical, pharmaceutical and cement	34, 593	Private and state enterprises	Mainly domestic
Ethiopian airlines	31, 142	Boeing, Airbus, Bombardier, Fokker	Exclusively foreign
Ethio Telecom	21, 670	Telecom and networking equipment providers	Exclusively foreign
Metal Engineering Industry	20, 466	METEC	Mainly foreign, some domestic
Management and privatization of public enterprises	19, 095	State enterprises	Mainly domestic
Textile and Garment Industry	15, 946	Private enterprises	Mainly domestic
AA Condo Construction	14, 960	Domestic contractors and SMEs	Mainly domestic
Fertilizer Industry	13, 205	New state enterprise	Mainly domestic
Leather Products Industry	6, 734	Private enterprises	Mainly domestic

Ethiopian Maritime Transit Service	6, 666	Domestic transit service producers	Mainly domestic
Micro and small scale enterprises	6, 600	Domestic SMEs	Mainly domestic
Ethiopian Airports Enterprise	6, 198	Domestic contractors – runway, civil works producers	Mainly domestic
Agro-processing industry	3, 347	Domestic contractors – agricultural producers	Mainly domestic
Ethiopian Dry Ports Service	3, 276	Domestic enterprises	Mainly domestic
Ethiopian Shipping Lines	3, 187	Ship-builders (China, Korea)	Mainly foreign
Total	569, 191		

Source: Access Capital (2011)

Table 4.6: Summary of Licenced Manufacturing Investment Projects by Year and Status (1992-2017)

Year	Implementation	Operation				Pre-Implementation	Total No of Projects
	No of Projects	No of Projects	Capital in '000' Birr	Perm Empl.	Temp Empl.	No of Projects	
1992		1	264	17	0		1
1993	1	5	7 486	161	15		6
1994	1	3	10 615	61	0	3	7
1995	1	18	56 140	420	300	8	27
	2	6	38 667	281	0	2	10
1997		6	49 763	285	0	5	11
1998		3	34 930	30	0	7	10
1999	1					3	4
2000	3	2	18 116	163	10	5	10
2001	2	2	34 403	479	38	3	7
2002	1	1	29 216	49	0	6	8
2003	2	1	2 572	30	0	11	14

2004	5	8	348 563	224	219	20	33
2005	1	4	56 685	132	48	23	28
2006	2	5	373 117	712	495	18	25
2007		11	819 546	1 284	1 287	32	43
2008	3	4	52 550	110	195	92	99
2009	3	11	943 862	475	723	23	37
2010	1	4	205 799	302	135	35	40
2011	2	3	5 223 947	970	2 780	83	88
2012	4	6	227 986	289	164	37	47
2013	6	10	307 061	323	170	31	47
2014	5	11	525 366	654	221	67	83
2015	10	7	1 807 044	856	80	111	128
2016	13	20	1 477 175	706	249	156	189
2017	5	6	121 597	195	95	118	129
Total	74	159	12 774 664	9 227	7 224	900	1 133

Source: Obtained by author from the Ethiopian Investment Commission in 2018

Data obtained from the Ethiopian Investment Commission for the period between 1992 and 2017 on foreign private sector investments into Ethiopia in the broader metals and engineering sector shows that the most significant capital (both actual and intended) has arrived mainly as single company investments, mainly from China, India, Saudi Arabia and Turkey (4.7). At the time that the data was collected, a total of 12 investments (already implemented) had been made as joint investments between Ethiopian private investors and foreign investors from China, Egypt, Italy,

South Korea and China. A few other joint venture projects were still at implementation or pre-implementation stage.

Table 4.7: Summary of licensed metal and engineering manufacturing joint venture investment projects (July 1992- October 2017)

Country of Origin	Implementation	Operation				Pre-Implementation	Total No of Projects
	No of Projects	No of Projects	Capital in '000' Birr	Perm Empl.	Temp Empl.	No of Projects	
Britain/Ethiopia						1	1
Britain/Germany/Ethiopia	1						1
Canada/Ethiopia						1	1
China/Ethiopia		5	2 184 165	965	133	1	6
Djibouti/Ethiopia						1	1
Egypt/Ethiopia		1	356 000	94	42		1
Egypt/Saudi Arabia/Ethiopia						1	1
Eritrea/Ethiopia		1	14 635	30	20		1
India/Ethiopia	1						1
Iran/Ethiopia						1	1
Israel/Ethiopia	1						1
Italy/Ethiopia	2	2	7 627	22	24	1	5
Saudi Arabia/Ethiopia	1	3	77 400	266	350	1	5
Seychelles/Ethiopia	1						1
South Korea/Ethiopia		1	14 563	16	20		1
South Korea/USA/Ethiopia						1	1
Switzerland/Ethiopia		1	4 500	20	10	1	2
Turkey/Ethiopia		1	52 000	60	20		1
USA/Ethiopia						2	2

Source: Obtained by author from the Ethiopian Investment Commission in 2018

4.4 Key institutions to assist metals and engineering sector growth

4.4.1 The Metals Industry Development Institute

The Metals Industry Development Institute (MIDI), which falls under the Ministry of Industry, was established in 2010 and is responsible for facilitating the development and transfer of metals and engineering industry technologies to the industry and enable it to become competitive. One of its key mandates is to address the gap of limited technology development in Ethiopian firms

by providing access to relatively simple technologies to private sector firms in the various sectors (metals, leather, agro-processing, agricultural, garments) to develop their products. For the most part, Ethiopian firms in various sectors source their technologies and spare parts from markets abroad, but MIDI aims to change this by promoting competitiveness of the domestic metals and engineering sector so that inputs are sourced more locally over time. (CSIR India, 2017)

The institute also supports the private sector capacity development such as investment capability (e.g., project development and acquisition of capital) and monitoring performance including quality and productivity improvement. Towards this end it has created a database for more than 100 medium and large (M&L) firms and eight ongoing projects, and allocated an engineer to each of the companies to provide support and monitor performance of the private sector. The Institute has also established a close relationship with the private sector through the Ethiopian Basic Metal and Engineering Association (EBMEA). It provides office for the association free of rent in its premises and also holds monthly meetings of the joint committee of the industry association and MIDI often identify the challenges and discuss on solutions. MIDI also facilitates dialogues between the private sector and the responsible government organs such as banks, revenue and customs authorities, and regional administrations in an effort of smooth implementation of the incentive schemes provided to the sector. MIDI has so far been partially successful because the quality of the technology it develops is still low in comparison to foreign providers of similar technology and the technology and spare parts it provides are not directly relevant to the needs of larger-scale firms (CSIR India, 2017).

As such the institute prepares and conducts skills upgrading through regular technical, marketing and management training. MIDI in 2014-15 carried out a total of 27 trainings benefitting 862 trainees across the private and public sector as shown in the Table 4.8 below. The trainings, however, do not cover a wide range of engineering topics that are pertinent to the metals and engineering industry. While MIDI does play an important role in imparting training to instructors and trainers at institutions of higher learning, in the industry at to the Metals and Engineering Corporation (METEC), there are some shortcomings, however, due to gaps in MIDI's own internal knowledge and expertise (Table 4.10).

The Ethiopian Society of Mechanical Engineers (ESME) on the other hand provides about 16 regular trainings, and delivers these to industry participants at various times during each year

(Table 4.9). ESME has been working in a tripartite committee with the Ministry of Industry and MIDI to draft a certification guideline since 2017; taking into account inputs from different stakeholders in the metals and engineering sector as well as the experiences of foreign countries in an attempt to improve tailored trainings for the metals and engineering sector (Ethiopian Society of Mechanical Engineering, 2018).

Table 4.8: Trainings conducted by MIDI in 2014-2015

No.	Area of Training
1	**Manufacturing & Production**
	Jigs and Fixture Manufacturing
	Lathe and Milling Machining Operation
	Machining Training (Lathe, Milling and C.N.C)
	C.N.C. Lathe and C.N.C Milling Machine Operation (First & Second Round)
	Basic Metals Work
	Metals Inspection and Cost Estimation
	AD Current First & Second round
	Heat Treatment
	Food Complex System Design
2	**Welding, NDT & Inspection**
	SMAW (Welding)
	Welding Fabrication and Assembly
	Welding and NDT Training
	Mechanical Stress Indicator (NDT)
	N D T Training
	Quality Inspection
3	**Software**
	Catia Software
	First & Second round Catia Software training for Federal Technical and Vocational, Education and Training Agency Professionals
	Solid Works Software Design
	Catia Design
	Auto Cad
4	**QMS & related area**
	Quality Management System (QMS)
	Kaizen Management System
5	**Other**
	Occupational Competency Assessment and Certification (COC) Training for trainers
	Industry – University and Technical and Vocational, Education and Training Colleges training

Source: CSIR India (2007)

Table 4.9: Trainings generally conducted by the Ethiopian Society of Mechanical Engineers

Engine Overhauling
Torque flow transmission and undercarriage
Fundamentals of industrial maintenance
Maintenance management
Port Machinery (Maritime)
Equipment technical specification preparation and bid evaluation
Occupational Health, Safety, Security and Environment
Pump selection, installation, operation and maintenance
Engine Overhauling
Torque flow transmission and undercarriage
Fundamentals of industrial maintenance
Maintenance management
Port Machinery (Maritime)
Equipment technical specification preparation and bid evaluation
Occupational Health, Safety, Security and Environment
Pump selection, installation, operation and maintenance

Source: own compilation from various ESME quarterly newsletters and annual conference proceedings

Table 4.10: MIDI's internal infrastructure and areas of expertise

Competence Area	**Infrastructure and resources**	**Knowledge and expertise level**
Machining and Tooling	Limited	Adequate
Metal smelting, casting and forming	Limited	None
Material evaluation, on advanced manufacturing techniques, on automation, on systems and controls, on basic electronics	None	None
Welding and NDT	Limited	limited
CAD related trainings especially with AutoCAD and CATIA	None	None
Materials modeling, on forming and fluid system modeling and simulation as well as on electrical and electronics software	None	None

Source: own formulation based on the report of CSIR India (2017) obtained from MIDI and the author's own physical assessment of MIDI facilities.

4.4.2 Ethiopian Kaizen Institute

Giving background context to the introduction of Kaizen in Ethiopia, the expert from JICA (interview reference: IO-JICA-1) highlighted that Kaizen implementation was brought into Ethiopia because it is considered by policymakers as a peer of industrial policy. It is part of the governments' attempts to revitalize the private sector and bolster competiveness through the implementation of Kaizen principles such as quality control, just in time, wastage reduction, cost control and inventory control. Ethiopia now has over ten years of experience with Kaizen, with its implementation having begun in 2009. It was Meles Zenawi who asked the Japanese government to support the implementation of Kaizen programmes for Ethiopia. Between From 2009 and 2011, the first phase of implementation, the focus was on experimentation with quality and productivity increases. From 2011-2014 there was the expansion of kaizen with a strong focus on capacity building for the dissemination of kaizen. By the mid-2018 about 35 medium-large companies had been introduced to Kaizen, and about 20 local consultants have been trained by the 6-9 experts from the Japan International Corporation Agency (JICA). In addition, 140

small enterprises which are housed in a vocational training centre have received training. JICA is continuously conducting certified consultant certification to improve the capabilities of consultants and sometimes offers scholarship at different levels for Ethiopian students to pursue degrees in Asia.

According to a Senior Manager in the Metals and Engineering Technology Transfer and Development Directorate of the Ethiopian Kaizen Institute (interview reference: GB-EK-1) EKI was established in 2011 as a government institution out of the realization that Ethiopia needs to own and institutionalize the Kaizen system and customize it to its own culture and context. The EKI collects information relating to productivity indicators (labour productivity, value added ratio, sales per employee, capital intensity, capital turnover ratio, operation profit ratio) at plant level. The institution has designated directorates to support each priority sector, with a number of trained experts functioning under each directorate. The metals and engineering sector did not benefit from the first phase of Kazien implementation. In the second phase, however, two firms in particular, Kaliti Metal Products Factory (otherwise known as Tsehay Industry S.C) and Mesfin Industrial Engineering, benefited extensively from the in-company training (ICT) that lasts 6 months per training cohort. Both firms have, according to a senior expert at EKI (interview reference: GB-EK-2) shown major improvements in their productivity indicators after the implementation of Kaizen with the assistance of the EKI-JICA team of experts.

The Japanese expert at JICA (interview reference: IO-JICA-1) did, however, express some concerns with the lack of consistency in the way in which the EKI is adopting kaizen. In particular, he pointed out that the rapidity of moving on too quickly to try new approaches such as benchmarking, the adoption of business score cards and business process reengineering even before positive results were registered in the initial phases of kaizen was problematic. Another main concern for the expert was that the frequency with which the EKI was moving to implement new improvements in production processes results in Ethiopian firms becoming too weary and fatigued due to constant and new changes that impede them from focusing on their core business. The expert at EKI (interview reference: GB-EK-2) noted that Ethiopian workers enjoy environments where there is freedom and flexibility. There has, therefore been some

difficulties with getting buy-in from workers, who view Kaizen as imposing straight-jacketed methods on them, to approach Kaizen dissemination and implementation with a positive attitude.

4.4.3 Universities and training institutions

The Addis Ababa University (AAU) is recognized as the leader in research and innovation in Ethiopia. The university pursues and encourages technology transfer through both formal and informal channels through its university-industry linkage and technology transfer office. According to the Director of the University-Industry Linkages and Technology Transfer office (interview reference: U-AAIT-1) companies can approach university researchers through this office to collaborate on research together that would see improvements in existing products and their quality, production processes, service quality, new product development elements. The universities research outputs that have been identified as having commercialization prospects are also patented by the university. There are a few existing research outputs from Addis Ababa University staff and students, which have been patented locally. The university also enters into agreements on consultancy services whereby industry can consult with staff on issues such as new technology acquisition and utilization. The most channels include training, construction supervision and design verification (interview reference: U-AAIT-1). The Addis Ababa University also runs a Technology Business Incubation Centre (TBIC). During a visit to the premises and facilities of the TBIC in November 2018 I found it to be in a poor condition in terms of resources and equipment. The Manager (interview reference: BIC-AAUBIC-1) of the centre mentioned how the TBIC gets very little funding from the AAU, but a major portion of its funds comes from the generous support of the Swedish Development Cooperation (SDC).

The Defence Engineering College (DEC), which was created under the Ministry of Defence and has close links with the Metals and Engineering Corporation (METEC), brought together former technical training centers, which were reorganized to meet the mid-level technical needs of Ethiopia's post-Derg army (Berhe, 2017). The DEC's curriculum is tailored in light of the current skills and capacity shortages in Ethiopia, but also attracts students as far as Rwanda, Kenya and Sudan. It graduates around 600 engineers each year and is the alma-mater of most of METEC's managers (Weis, 2016). According to the Manager of the Ethiopian Basic Metals and

Engineering Association (interview reference: IA-EABMEI-1) what sets the Defence Engineering College apart from engineering departments in public universities across the country is that its targeted approach to skills development offers specialized courses from first degree level right through to senior degrees. The various specialized engineering fields in which engineers are trained in include the design and maintenance of aeronautics and tanks, along with information technology, chemical, mechanical, metallurgical, and ballistic engineering (Berhe, 2017).

4.5 The Metals and Engineering Corporation (METEC): The brainchild of Meles Zenawi

The Ethiopian government has been reluctant to relinquish some of its state-owned enterprises. SOEs are relatively more visible in industries such as wood products, chemical products, basic metals and engineering, textile and basic iron and steel. In some industries, the government prefers to engage in joint ventures with private companies rather than sell an entire entity. Many of the state's assets that had been inherited by the state during the transition of the early 1990s and which remained non-privatized were revived over the last decade and have been engaged in the economy quite substantially as part of a major SOE expansion strategy. (Gebreyeesus, 2014; Unites States Department of States, 2014; IMF, 2015).

The Metals and Engineering Corporation (METEC) is the state-owned enterprise for the metals and engineering sector and was established in 2010 by the Council of Ministers under regulation number 183/2002 (Negarit Gazeta, 2010). It was established with the intention to assist Ethiopia in the acceleration of the ongoing transition into industrialization and the aspiration of becoming a middle-income country by 2025. METEC is specifically designed to be at the heart of the governments' technology transfer and is mandated to promote and enhance technology as a necessary pillar of development.

To meet the targets set by the Growth and Transformation Plan (GTP), METEC would play a leading role in the take-off of the domestic industrial goods and equipment manufacturing sector by developing internal technological capabilities whilst at the same time being a 'conduit for technology transfer' to the domestic private sector by roping it in various partnership and sub-contracting roles. As METEC becomes competent in manufacturing capabilities and reaches a level of competitiveness in the production of high value spare parts, industrial machinery and

equipment, and vehicles geared towards meeting the country's mounting needs in the construction, agriculture, and transportation sectors, among others, it would be more viable for it to supply these as inputs at a reasonable price to private manufacturers of metal and engineering products (Africa Development Bank Group, 2014; UNCTAD, 2016) The much grander vision is for Ethiopia to be more independent in the design, erection and commissioning of its own factories and industrial plants (Ethiopian Society of Mechanical Engineers, 2010).

Leading up to the creation of METEC, it is clear from Prime Minister Meles Zenawi from his various works, the manuscript of the book 'African Development: Dead Ends and New Beginnings' (Zenawi, n.d), and a book chapter titled entitled 'States and Markets: Neoliberal Limitations and the Case for a Developmental State' (Zenawi, 2012), that Meles Zenawi was aware of the fact that a developing country like Ethiopia needed an activist developmental state to pursue economic development and industrialization. For Meles Zenawi, Ethiopia needed to do away with the universal principle enshrined by neoliberal ideology that gave supremacy to the private sector as being best suited over the state in leading the process of technological accumulation and development (de Waal, 2018). Meles Zenawi believed that Ethiopian private sector was still relatively poorly equipped to embark on technological capability building on its own without the intervention of the state due to a number of market failures. Linked to this idea also, was his understanding that technological change could only happen through conditions of learning rents, whose funding would need to come from the by government following a development strategy (de Waal, 2018).

He had been very well aware of the challenges faced by many other African countries in relation to the propulsion of industrialization, and the double-challenge of the absence of a domestic industrialist class and technology development. This, in Meles Zenawi's view, was what led to bigger problems, including the non-formation of domestic linkages, balance of payment problems due to imports of capital equipment and machinery, and problems of legitimacy in relation to the use of learning rents. His regime, therefore, wanted to make a break with excessive reliance on foreign capital for leading the process of technological change, which had yielded very little transformative outcomes in other African countries. The basis on which METEC would then be founded upon can be easily located in the corporation's slogan:

"Learning as we do, doing as we learn", which suggests a learning-by-doing imperative and justification of the learning rents directed to the corporation (interview reference: METEC-I4).

As opposed to the narrow understanding and focus on development as a mere process of capital accumulation, Meles Zenawi ascribed to the view that development should be defined as technological capacity development, which is a far more important competence whose process that takes time and needs to be tied to domestic capabilities (de Waal, 2018). The Director of METEC's Research and Development Centre (interview reference: METEC-I4) indicated that Ethiopia needed to avoid the problem of becoming 'technologically colonized' as is the overwhelming reality of many African countries where technologies are introduced by FDI and foreign capital, but the indigenous people are largely incapable of contributing to the nation's innovation and capabilities. According to the Director of the Research and Development Centre (interview reference: METEC-I4), METEC was the best candidate for leading the technological capability development charge since it already had some basic understanding of technological specifications in areas of military, agricultural and capital equipment. It was therefore, not difficult for METEC to learn and adapt technology that was new to Ethiopia to local conditions that can be very specific to the country such as weather, geography and stocks of knowledge and resources.

At the time of its establishment in 2010, METEC had 10 billion Ethiopian Birr in capital. By 2018 that figure stood at more than 70 billion Ethiopian Birr (interview reference: METEC-I4). The corporation is the largest manufacturer in the metals and engineering sector and apparently holds the status of the biggest, richest and most influential manufacturing enterprise in the country. When the corporation was established it employed about 7000 people. Today, that number stands are over 19000 (UNCTAD, 2016; Abbas, Anderson, Dixon, Hurd and Raymond, 2015). Currently, there are 15 semi-autonomous, and integrated manufacturing industry complexes organized with more than 75 factories under METEC, most of which are situated in Addis Ababa. Table 4.11 below gives a summary of a selected few of METEC's industry complexes and the respective products/goods being manufactured in each of these.[10] Some of the industrial complexes, such as Bishoftu Automotive Industry and Adama Agricultural Machinery

[10] The full profile of companies can be found in the METEC's website www.metec.gov.et

Industry, have more specialized functions of producing commercial projects such as passenger vehicles and agricultural equipment; others such as Gafat Armament Industry are strictly engaged in the production of specialized weaponry; while the role of other industrial complexes such as and Ethiopian Power Engineering or Hibret Machine and Machine Building straddle somewhere between producing complete industrial goods and providing specialized engineering support to Ethiopia's various mega-projects.

Table 4.11: Selected METEC production complexes

Industry Complex	**Product/s and services**
Adama Agriculture Machinery	Design, build and integrate Agricultural machinery manufacturing plants; produce, assemble and supply quality and versatile horse power/HP range tractors with associated implements, water pumps and irrigation equipment used for different agricultural processes, construction activities; Various tractor implements and attachments such as disc, ploughs and harrow and special purpose impose implements and attachments /threshers, sprayers/etc.
Akaki Basic Metals Engineering	For sugar factories: head stock, trash plate & scrapper plate, pinion & sprocket gear, mill roller, draw eye shaft & bushing; For construction sector: blade & ripper tip, truck shoe, manhole covers, etc.; For cement factories: cement ball, crusher hammer, mobile & fixed jaw plate, armor plates, different types of liner plate, etc.; Infrastructure sector: Water pumps, dam gates; Transport sector: brake drum, central support, spoke wheel, front hub, 5th wheel, shackle balance weight, etc.; For Ethiopian Electric Utility and Ethiopian Electric Power: cross arm, different types of hooks & pins, big collar & bolts
Bishoftu Automotive Engineering	BAI assembles public transportation buses, heavy duty trucks, mini trucks (2, 3, 5 ton) pick-ups (double and single cab), SUVs, dump trucks, passenger vehicles, inter-city bus bodies (12m and 18m). Manufacture of intercity mid bus and city mid bus bodies, all types of truck cabins water and fuel truck, high bed and low bed, mixer drum, and multi-purpose military vehicles. In addition to producing and supplying automotive products it is also working on the expansion of modern automotive technology as well as related production facilities owned by private enterprises.
Hi-Tech Engineering Industry	Manufactures electronic, electromechanical and opto-electronic technology such as: the production and assembly of communication radios (both for military and commercial purposes), radar systems, cell phones, TVs, DVD-T2 set-top boxes, radars, electromechanical devices such as energy/power meters, data concentrators, health monitors, harmonic analyzers, optical devices such as night vision devices, thermal imagers, and security cameras; Constructing opto-electronics and electro mechanical device

	manufacturing plants for different scale enterprises and associations in favor of young manufacturers all over the country.
Hibret Machine and Machine Building Building Industry	Industrial Machines: CNC Lathe Machine, CNC Milling Machine, Salt Iodization Machine, Drilling Machine, Textile Machineries, Agro processing Machineries, Lather Factory Machineries; Spare parts for: For sugar, textile, tannery products, agro processing, cement, construction machinery factories; Bearing products: ball, roller, and tapper roller bearings; Brake pads: brake pad, brake shoe, dram type brake shoe
Metals Fabrication Engineering	Engaged in the fabrication, manufacturing and assembly of various metal-based products; such as construction machinery parts, bus body frames, boats, tower cranes, construction lifters, transmission towers, dismountable houses, forging and pressing products; Outsourcing and constructs many types of fabrication workshops for micro and small enterprises throughout the country in favor of young producers.
Ethiopian Power Engineering	Distribution Transformers, Distribution Compact substation, Automatic Power factor Corrector, Wire and Cable products, Diesel engine, Solar Panel /PV, Hydro Turbines, Diesel and thermal Generators; Design and Development, Production, Planting and Commissioning Works of: Power Plants, Electrical Machines, Equipment, and Accessories; EPEI is constructing a number of power generation and electrical grid equipment manufacturing plants all over the country for micro, small and medium scale business associations.
Homicho Ammunition plant	Manufacture, repair and modernizing of armed vehicles for both domestic military use as well as for the African Union's peacekeeping mission, of which Ethiopia is the largest contributor. Homicho Ammunition's business operations extend to the repair and renewal of aircraft, and the production of ammunition (possibly up to 26 different types, including "tank shells, mortar bombs and grenades; and 120mm 'Katyusha' rockets") in addition to several basic infantry weapons. A May 2016 report (cited in Pax Report) highlighted "the most sophisticated work known to have been carried out by the Ethiopian defence industry to date" with the transformation of S-75 surface to air missile kits into self-propelled systems.
Gafat Armament Industry	Originally designed to manufacture AK-47s and light machine guns, but has since been upgraded to produce 40-mm grenade launchers, vehicle-mounted automatic weapons and heavy artillery. In addition, it carries out armament maintenance for the Ethiopian National Defense Force. Both plants are said to have been developed with assistance from North Korea during the Derge regime.

Sources: METEC website, media sources, pamphlets, online reports, fieldwork observations

While METEC was only promulgated in 2010, its roots can be traced back to different pockets of firms and plants that had been already in existence decades prior. They either originated from within the defense industry sector or existed as separate entities within various state-owned industries, of which some of their capabilities date as far back as the 1950s. Table 4.12 below outlines the timeline of prior existing capabilities that culminated into the formation of METEC. As far back as the 1950s, foreign governments of countries such as North Korea played a pivotal in assisting the Ethiopian government to create and maintain engineering facilities, more notably in firms such as Homicho Ammunition Industry and Gafat Armament Industry (Berger, 2015).[11] The most formidable of these operations, however, emerged around the 1980s under the Derg military regime with a number of training initiatives having been formalized to create a cadre of mechanical engineers and technicians in engineering design & manufacturing, tool design and manufacturing, and foundry technology; all with the idea of building engineering design capability for the defence industry (Ethiopian Society of Mechanical Engineers, 2010).

[11] To the dismay of the United Nations, two METEC complexes, Homicho Ammunition Industry and Gafat Armament Industry, are believed to still have links with North Korean government in terms of the purchase of spare parts, machinery and supplies and other technologies conveniently available and cost-effective for the Ethiopian context (Berger, 2015).

Table 4.12: A Timeline of METEC's Foundations

1953: Emperor Hailesillasie I's sets up an ammunition factory following an agreement signed with government of Czechoslovakia
1984: Military Derge Regime expands on the annumition factory to adapt it with the then existing technology. The Derge builds various defence factories based on its collaboration and credit facility access from socialist countries (former Soviet Union, North Korea, etc.)
1987: Defence Industry Commission is set up to manufacture the weapons and armament demanded by the military regime
1990-1996: The name was changed to Engineering Industry Commission by the transitional government. It comprised the following four factories: Addis Machine Tool Factory; Tatek Engineering Factory; Gafat Engineering Factory; Nazret Canvas and Tailoring Factory
1996: Meles Zenawi establishes the Basic Metal and Engineering Industry (BMEI) Agency in replacement of the former Engineering Industry Commission.
2004: Defence industry coordination office put in charge of the BMEI Agency: Project 40720; Branna printing Enterprise; Lalibela Engineering and Construction Company; Kality Construction Material Production enterprise; Dejen Aviation Maintenance and Engineering.
2007: Restructuring and renaming to Defence Industry Sector. With five military engineering complexes and two development enterprises which included the Dejen Aviation Engineering Complex; Bishoftu Motorization Engineering Complex; Hibret Machine Tools Engineering Complex; Homicho Ammunition Engineering Complex; Gafat Armament Engineering Complex; Nazret Canvas and Tailoring Factory and Branna Printing Enterprise
2010: METEC is established and the different enterprises and engineering complexes are all organized under the corporation.

Source: own formulation based on information from documents collected from METEC

When the Derg military regime was commissioning its plants during the 1980s and 1990s, the Ministry of Industry (MOI) was also establishing core engineering facilities such as the Akaki Spare Parts Factory, the Akaki Pump Factory as well as the former Engineering Design and Tools Enterprise. Additionally, a number of other engineering industry projects were studied by the MOI, but were never commissioned (Ethiopian Society of Mechanical Engineers, 2010).

Akaki Spare Parts and Hand Tools S.C (otherwise known as AKAKI), a large state-owned metal processing factory that specializes in the production of industrial spare parts, automotive spare parts, boiler electrodes, hand pumps, cutlery and industrial hand tools, which was established in February 1989 (Sutton and Kellow, 2010) is worthy of specific attention because of its characteristic as one of the few flagship factories in Ethiopian engineering history.

AKAKI holds the status of paramount importance in relation to all other capabilities that were built and subsequently deployed to support the evolution of other firms and the sector at large as well as in the service of developing technological capabilities in specific firms such as METEC. Already by the mid-1990s AKAKI was well-placed to move beyond the manufacture of simple technologies for textiles sector and into the local manufacture of components such as spare parts for the automotive sector. It had ample, but under-utilized, capacity that could, with diversion and mastering, be utilized towards this end (Geletu and Habtu, 1995; UNIDO, 1997; Rao, 2000). Geletu and Habtu (1995:10) noted that "on the basis of the needs of the market and most of all, considering the process technologies involved, a large number of components can be produced in reasonable quantities at the Akaki Spare Parts and Hand Tools Factory (AKAKI), provided a proper expansion of the plant is to be integrated with new specialized machines". UNIDO (1997:23) also noted the potential of AKAKI, claiming that "the Akaki Spare Parts and Hand Tools Factory of Ethiopia offers a good example of a huge plant with capacity to satisfy some of the requirements of a number of African countries in terms of agricultural implements and various spare parts".

In addition, the capabilities at AKAKI were bolstered by the existence of a centralized engineering design and tools manufacturing center, which became operational in 1993 as was equipped with conventional and Computer Numerical Control (CNC) machines and had well-trained staff (Rao, 2000). By the late 90s Ethiopia's spare parts manufacturing capabilities were much lower in comparison to that of Egypt, Nigeria, South Africa and Zimbabwe, which were all just a few exceptions of relatively higher manufacturing capacities during a time where spare parts manufacturing was at its initial stages of development in Africa where manufacturing was based mostly on imported inputs. In comparison to counterpart plants in neighboring and East African countries on the continent such as in Tanzania, Uganda and Kenya, however, AKAKI stood out in terms of its potential contribution towards industrialization (Makonnen, 1995). By

2010 AKAKI was the largest plant of its kind in East Africa and is still a centralized integrated complex with various departments and capabilities (JICA, 2010).

4.6 Mega-projects as a conduit for developing domestic manufacturing capabilities

In the past, the Ethiopian government had in general tended to be risk averse when awarding infrastructural projects such as wind farm equipment, industrial parks stadiums and housing projects, often doing so on an EPC (Engineering, Procurement and Construction) basis in order to shift to what Hosie (2007) calls 'completion risk' with its associated strict requirements of completing within the agreed price, agreed timescale and performance quality. While certain past projects, like the Chinese-constructed Addis Ababa Ring Road have on occasion tended to involve a higher than usual level of domestic capacity, this has been largely limited to service providers such local insurers, local equipment leasing companies, suppliers of low-technology implements, local designers and engineers and local partners through limited contractual relationships.

With METEC firmly established, the government took the decisive move to award significantly important parts of contracts in some of Ethiopia's biggest mega-projects to the corporation. The learning-by-doing and technology transfer approach in METEC was conceptualized in such a way that it would entail a three-way process. METEC would build its own internal capabilities by working with international firms who have more experience on the highly complex elements of industrial and infrastructural projects whilst at the same time drawing in the domestic private sector as part of the government's attempts at building local capacity in domestic firms that could capably rely on its own technological capacity for future projects (interview reference: METEC-I2; UNCTAD, 2016).

The Grand Ethiopian Renaissance Dam (GERD) is one of the projects in which METEC has been extensively involved. As the world's largest roller-compacted concrete (RCC) dam at 10.2 Mm3 and Africa's largest hydroplant it is the poster child of Ethiopian ambition (Ferraro, Bezzi, Rossini, and Mastrofini, 2015). Once complete, its reservoir of 70 km3 will be comparable to those of Bennett in Canada and Kraskoyarsk in Russia. Although the project was awarded to an Italian company, Salini Costruttori SPA, as the main contractor, the full electro and hydro

mechanical work was awarded to METEC. Alstom, a French engineering company, supplies the turbines and generators and supervises the installation of all the electro-mechanical equipment for the hydro-power plants (Reuters, 2018). METEC is responsible for working on some of the important divisions of the mechanical and electro-mechanical and hydraulic steel structures. In an interview with the Reporter (2017) the former Minister of Communications and Board Chairman of Ethiopian Electric Power, Dr. Debretsion Gebremichael, described the motivation for domestic capital involvement as follows:

> *We have also increased our domestic technological capacity in the process. We decided to do something which we have never done before and we have managed to do that. You see, we can never say that we are free until we have developed the capacity to undertake such projects on our own. Being able to mobilize finances to hire foreign companies to undertake our projects is not enough; it is not independent in its true sense. So, it was important to have our own domestic contractors involved in this flagship project.*

In unison, the position of the government appeared to reflect the words of the now-deceased Dam's former Chief Engineer, Semegnew Bekele, who was appointed by Meles Zenawi who was quoted in the Ethiopian Herald (2015) that "the vision is to undertake projects such as GERD with internal capacity with the supposed aim of creating national consensus and self-reliance. In the ongoing construction of the Dam, new technologies and knowledge are introduced. This helps us capacitate ourselves to implement similar future projects on our own".

The government's belief that METEC was capable of leading some of Ethiopia's mega-projects is justified by what was believed to be a set of pre-existing technological capabilities and the potential to further develop and fill the technological gaps. The Basic Metals and Engineering Industries Firm-Level study by JICA (2010) highlighted existing technical capability in Ethiopia's engineering and equipment industry at that time to include experience in the production of medium-level products such as penstocks where the Ethiopian Electric Power Corporation had previously collaborated with domestic companies to produce these. JICA's assessment of potential engineering products that could be newly produced domestically, taking into consideration the potential demand and technological capability of domestic industries,

recommended the production of penstock, water gate, valve for dam, amongst other medium-level products.

According to JICA (2010), by 2010 AKAKI (had) a function of R&D because it was already equipped with wide range of metal working, machine tools, metal engineering devices and designing capacity. And current good relation with the EEPCO shall be developed to a stronger relation to cooperating relation for new products development. The idea to design and develop some hydropower-related equipment and parts locally for the GERD, was, for example, preceded by the mastering of capabilities in gear boxes that were cast and assembled for irrigation water gate lifting equipment, as well as worm gears and worm wheels which were "strong" capabilities in AKAKI. The successful development of gear boxes of lifting equipment for low head irrigation gate at Oromia Water Works, among other developments, by AKAKI pointed in the direction that with the attainment of strong and highly reliable machinery and finite element analysis over and above the CAD technologies that existed at the time, it seemed possible for the firm to develop hydropower plant gates and their controlling systems for mega projects (JICA, 2010).

Apart from the GERD, other megaprojects awarded to METEC include Sugar Development Projects, which are under the sole coordination, supervision, and control of the Ethiopian Sugar Corporation (ESC), and the Yayu Fertilizer Complex, which is under the control of Ethiopian Electric and Power Corporation (EEPCo). Initially, a total of 10 sugar projects consisting of sugar estates and sugarcane processing facilities were awarded to METEC to develop (Kamski, 2016).[12] AKAKI as illustrated by JICA (2010) had already shown some achievement in the development of sugar mill roll equipment such as cast steel roller shells, shafts, power, equipment, and gears. Between domestic private companies such as Mesfin Industrial Engineering, Sintec Ethiopia, Pasqua Giuseppe, Maru, Kambolcha, Sintec, Kasma, Euro Cables, etc. there had been some demonstrable achievements in producing various kinds of equipment

[12] Among some of the new estates and sugarcane processing are facilities in Afar (i.e. Kessem Sugar Development Project, Tendaho Sugar Development Project), Tigray (i.e. Wolkaiyt Sugar Development Project), Amhara (i.e. Beles Sugar Development Project), and Southern Nations, Nationalities, and People's Regional State (SNNPR), the Kuraz Sugar Development Project (KSDP).

which, with further development, could serve as inputs into the mega-projects. (see table 4.13 below).

All three mega-projects under the microscope of this study, namely the GERD, Sugar Project and Yayu Fertilizer Complex, have suffered setbacks and delays (see Table 4.14 below for project status). By the end of 2018, each one of the projects was running behind schedule by a number of years, in addition to significant cost overruns. This begs the question: do these setbacks and delays indicate the failure of the Ethiopian developmental state?

Table 4.13: Firm technological capabilities in power plant equipment, transmission equipment, construction equipment and spare-parts

Company	Power equipment	Transmission tower	Turbine Manufacturing	Construction Machinery	Sugar
Akaki	Experience in transformer, irrigation gate, gear boxes of lifting equipment for low head irrigation gate	Experience regarding middle voltage accessories	potential capacity to manufacture such parts	Axle shaft; Cement crushing ball, but the volume is small	Sugar roll: Cast steel roller shell, shaft, gears
Kombolicha	N/A	High V Tower Prototype completion	N/A	N/A	N/A
Maru	N/A	Basic technologies for design and manufacture; designing ability by auto CAD, CATIA; Cooperation with a German company was under development	N/A	N/A	N/A
Mesfin Industrial Engineering	Experience in producing Penstock; experience in producing intake liners	H=15m Communication tower: H=92M	N/A	Concrete mixer; Axle shafts	Turnkey plant installations in firms like Mesfin Industrial Engineering
Sintec	Experience in producing mini hydro penstock	Communication tower: 30m.50m.70m.	N/A	Irrigation siphon piping	Produced sugar tank for MAKUHARA sugar plant.
Pasqua Gussepie	N/A	N/A	N/A	N/A	Chain mechanism for discharging stacked cane.
Radel Foundry	N/A	N/A	N/A	N/A	Cylindrical products to cement industry and sugar industry.
Kasma	N/A	N/A	N/A	Crusher assembly 100/Y; Jaw crusher / rotary crusher assembly industry; Engine rebuilding/reforming business	N/A
Euro Cable	N/A	N/A	N/A	N/A	Cable work for Tendao sugar project

Source: authors own formulation based on information collected during fieldwork

Table 4.14: Progress status of selected mega-projects

Project	GERD	Omo Kuraz Sugar	Yayu Fertilizer Complex
Client	Ethiopian Electric & Power Corporation (EEPCO)	Ethiopian Sugar Corporation (ESC)	Chemicals Industry Corporation (CIC)
Main Contractor	METEC	METEC	METEC
METEC's Responsibility	Electromechanical and steelworks.	Construction and design work of the processing factories	Manufacturing & Procuring as well as installing machinery
Mains Sub-Contractor(s)	Salini Impregilio (Italian) – Civil works Alstom (FR) – Supply of turbines. China Gexhouba Group Corporation	COMPLANT (Chinese) Santa Maria Construction P.L.C (Ethiopian private firm) - construction works (Kuraz I) Yirgalem Construction P.L.C (Ethiopian private firm) - construction works (Kuraz I) Braunschweigische Maschinenbauanstalt AG (Germany) Consultancy and design services provided for the construction of Kuraz I factory	COMPLANT - design, manufacture, supply, transportation to site, site preparation, installation, supervision, commissioning, and training of personnel Tekleberhan Ambaye Construction Plc (Ethiopian private firm) - Building Contractor: cite clearing for the power plant terminal, gas disposal plant, and ammonia and urea units and a place for the installation of 6 machineries. Civil works to be constructed by TACON includes the structure of the building. TACON subcontracted some minor works to 12 different SMMEs. Addis Ababa Institute of technology (AAiT) -consultant on the project.
Estimate Project cost	At the beginning it was estimated that the project would cost about 88 billion Ethiopian Birr, or about 4.5 billion USD 25.58 billion birr contract awarded to METEC	Construction of the Omo Kuraz 1 factory consumed 235 million USD.	METEC said in 2012 that the Yayu fertilizer project would cost 11 billion birr ($400 million) Launched as 540 million dollar undertaking Initial price of 730 million dollars that was given by COMPLANT
Estimated time to complete (expected finalization date)	Launched 2011 – expected completion time 5 years.	Launched 2011 – expected completion time 2016 Daily Monitor July 2018 - The two factories are still under construction despite METECs commitment to finish construction on Tana Beles five years ago and Omo Kuraz 3 years ago.	Launched 2012 – expected completion time was 2 years The China National Complete Plant Import and Export Corporation in 2006 stated that the fertilizer factory would take four years to build. However, Metec revised their study and said they could complete the project within 2 years. The factory expected to be complete by end of the 2014/15 fiscal year, but only about 20% progress had been made by then

Local workforce	10 000 By 2015, out of 38 internationally licensed Ethiopian welders, 15 were working in METEC and particularly 7 are in the GERD.	Construction and waterworks, land preparation, and sugarcane cultivation had created employment for a total of 30,000 people	The finished complex calls for the hiring of 35000 workers.
% of project completed	Ethiopian Herald (27 January 2017) claimed that 58% of the dam construction recorded to be completed. By September 2018, more than 65% of the electromechanical job has not been performed. However, another source claims that only 30% of the project had been implemented.	In May 2016, in his audition in front of the Parliament, the CEO of ESC admitted that two years after the completion of GTP I only one factory out of ten was almost completed for 96%, while 90% of the full payment had already been made to MetEC. Beles II and Tendaho have been stopped for now. 27% of Tendaho and 25% of Beles II have been completed. A year ago the govt cancelled Beles III and one of the five Kuraz sugar projects.	By 2018, the project has reached 43.8% completion According to the report of the office of the Federal Auditor General 43% had been completed.
% of total funds already accrued to METEC	16.79 billion Birr in payments (66 percent) as opposed to opposed to 8 billion birr it was supposed to have received for less than 30% of the work.	90% of the full payment had already been made to MetEC (big projects, strong states)	The last report of the auditor general submitted to parliament shows that METEC was paid 5.6 billion Birr, 60% of the project budget
Cost overrun	By September 2018, the project had already consumed over 70 billion birr, a documentary by a state-affiliated Fana Broadcasting Corporation revealed.	N/A	In 2018 METEC asked for a further 20 billion birr to complete the project

Source: various sources including, newspaper (Addis Fortune; Ethiopian Herald; Daily Monitor), Online Media (Reuters); academic articles (Fantini, Muluneh and Smit, 2017; Kamski, 2016; Maupin, 2016), contract agreements, tender invitations and bids.

Chapter 5

Learning as we do, doing as we learn: the role of the Metals and Engineering Corporation (METEC) in the accumulation of productive capacity and technological capability

It could be argued that a country without much experience in solving technological problems should stay away from [such] projects…But the opposite course can also be defended: how will the country ever learn about technology if it does not tackle technologically complex and problem-rich tasks?…[A] certain 'unfitness' of the project for a country becomes an additional and strong argument for undertaking it;…if it is successful, it [the project] will be valuable not only because of its physical output but even more so because of the social and human changes it will have wrought (Hirschman, 1968: 129).

5.1 Introduction

The aim of this chapter is to provide an assessment of the processes and outcomes of technological capability building and the quality of learning in Ethiopia's metals and engineering sector. The crucial question that the chapter sought to answer is: has there been learning and through which channels? How much of this learning process is being accompanied by the development or stimulation of technological capabilities among domestic capital? A specific focus is on METEC (and the ecosystem around it) as a conduit for technology transfer, instrument for supplier development and greenhouse for the incubation of domestic capital. The chapter opens up the black box of these multiple interactions by constructing the more or less 'hidden' elements of METEC's technological model and analyzing the linkages along the metals and engineering value chain and linkages in capabilities between METEC and the private sector.

The way in which the METEC structure has been conceptualized is based on the recognition that development goes far beyond technology acquisition, but entails a complex process of learning how to efficiently use that technology, emulate its development and eventually reach a point of capability accumulation where innovation can be carried out independently. What emerges is a

picture of METEC as a highly complex corporation with multiple interactions that crisscross the state, foreign firms and domestic firms. More specifically, the complexity of the corporation's structure can be observed in the various projects and sub-industries that it is simultaneously engaged in, the wide range of technology partners and subcontractors involved (both domestic and international) and a network of multiple state actors and institutions with different coordinating roles.

The empirical data presented throughout the different sections relates mainly to three mega-projects that METEC has been significantly involved in namely, the Grand Renaissance Dam, the Yayu Fertilizer Project, the sugar projects as well as the various commercial products being developed within the corporation's different subsidiaries. The results show a mixture of outcomes that include successes and failures. There are encouraging signs of upgrading and investment into new technologies in both METEC and the domestic private sector, which can be interpreted as contributing to the acceleration of learning. METEC has expanded and diversified its portfolio and in some cases was directly involved in the execution and expansion of its own plants. At the same time, however, the technology, innovation and skills development that is happening is still at a relatively embryotic stage of development and there are deep challenges that are associated with the navigation of technical complexities and managing a diverse set of mega-projects and subsidiaries that still need to be overcome. There is room for more improvement in technological deepening; technological selection, quality of products; pace in the execution of projects and; better coordination in the engagement of the private sector.

Section 5.2 looks into the processes of technology adoption and internalization through various types of transactions on international technology markets and partnerships with foreign firms. The findings suggest that transfer has progressed, but METEC still has a lot to learn to get to the point where its runs complex projects more independently. Section 5.3 shows how, even though METEC has built on industrial capabilities of the past and, thus, expanded and diversified its operations, technological deepening is unevenly distributed between different sub-sectors; showing major progress and depth in the power equipment, but relatively shallow levels in the automotive and locomotives business.

Section 5.4 paints a multidimensional picture of how domestic firms in assembly operations, civil engineering and capital equipment production have been benefited from their links to METEC. The section pieces together firm histories and the capabilities that firms have developed through subs-contracting opportunities under the METEC structure. The government's push to develop a competent, dynamic and more advanced industrialist sector is somewhat materializing as firms have witnessed growth and expanded their competences and operations.

Section 5.5 looks at attempts to incubate small and medium domestic firms through joint product development, skills development and research. The results show non-coherence in the strategy and the institutional linkages between METEC, other state institutions and the private sector that would make innovation and collaboration in projects have not been fully explored or realized. More competence building needs to be encouraged so as to improve the quality of interactions that are currently poor and not conducive to the goal of incubation.

5.2 Learning through the prism of international partnerships for technology acquisition and capability development

Soon after the corporation's establishment in 2010, METEC had already identified about 107 domestic and foreign partners to assist it with additional capacity in its various projects as well as for the purposes of technology transfer (Ethiopian Society of Mechanical Engineers, 2010). Around 2013, the corporation journeyed on a mission to seek out more international firms with which to partner with in efforts to strengthen its technological capability building (Bloomberg, 2013). This was in line with the Ethiopian Industrial Development Plan (2013:60) which pays specific attention to the need for "a number of projects and major activities to be undertaken are selected for implementation by the government in collaboration with the private sector and development partner countries". International companies with expertise in mega-project construction such as Salini Impregilio, the main contractor for the Grand Ethiopian Renaissance Dam (GERD), were strategically handpicked by Meles Zenawi. Salini Impregilio was picked in a no-bid contract for US$ 4.8 billion on 31 March 2011 based on the understanding that the company had a well-established presence in Ethiopia since the 1950s and therefore could be somewhat trusted with the project (Koenig, 2018).

Whilst international firms play a huge role, the general principle in partnerships has been characterized by a reluctance to fully-outsource each and every element of project design, technology acquisition, machine building and plant expansion. One of the earliest decisions by the government concerning some of the mega-projects was to allow METEC to do undertake the feasibility and investment analysis for the various projects. However, with regards to the sugar projects, for example, METEC proceeded without having adequately conducted the pre-investment feasibility studies. In cases where the feasibility studies were conducted, such as with the Yayu Fertilizer Complex project, the costing and time-to-completion projections have proven to have been largely inaccurate. The China National Complete plant Import and Export Corporation, on the other hand, had estimated that the fertilizer project would take four years to complete, but METEC's more optimistic projections suggested that the project would take two years to complete, which would be by the end of the 2014/15 fiscal year (Fortune, 2018). Likewise, for cost estimations, the Chinese projections for the project were 730 million Dollars whilst METEC estimated that it would take almost less than half of that, i.e. 400 million dollars. The project was launched according to METEC's lower estimations at a slightly higher value of 540 million dollars (Fortune, 2015b; The Daily Monitor, 2018)

In relation to manufacturing elements, METEC was also given a sizeable responsibility in the projects. The contractual arrangements under the GERD have, for instance, been deliberately crafted so as to constrain international firms to work with METEC in its assigned role as the lead sub-contractor for the electromechanical, hydro-mechanical and steelworks of the dam. Part of the numerous parts manufactured by METEC includes the two 137 tonne radial gates, which were fitted at the bottom of the dam and are meant to control the water flow (Ethiopian Herald, 2017). METEC's Akaki Basic Metals Industry (ABMI) has been specifically responsible for the manufacture of a number of eight diameter penstocks meant to be embedded in the body of the dam in order to run stored water by the dam to the turbines that generate electricity. Ethiopian Power Engineering Industry (EPEI), on the other hand, was responsible for the manufacturing of 16 elbow type draft tubes (ibid). The role of supervising METEC for the installation of the 16 turbines for the dam was given to the supplier of the turbines, Alstom, a French engineering company that plays a broader supervisory role in the installation of all the electro-mechanical equipment for the hydro-power plants (Fortune, 2018b). Alstom also supervised the fitting of 4

(octagonal section 7.5x8.3m) box culverts that were supplied by a Cyprus company called Waterwise Limited (interview reference: METEC-I12).

In cases where the corporation's leadership felt that requisite skills and competencies for manufacturing parts for the various projects or commercial products were beyond its reach, the process of technology acquisition and expansion has revolved around strategic partnerships, joint ventures, licensing agreements with leading technology providers mostly from China, Europe and the Middle East. With the fertilizer project, for example, while some parts were being produced by Hibret Machine and Machine Building Industry (HMMBI), a significant portion of the advanced systems technologies were done in collaboration with the South Korean firms who specialize in advanced systems and technologies. Through the local coordination of design and production of the machinery HMMBI was, thus, able to develop some know-how and technical capabilities to adopt, adapt and integrate equipment on the go (interview reference: METEC-I7; METEC-I13).

Overall, the readings of transactions and contracts on technology purchases paint a picture of targeted and strategic technology selection as evidenced by repeated contracts and purchases from companies such as Poly Technologies, which appears to be by far the most contracted firm for technology equipment, solutions and services, where a relationship had been established and the properties of the technologies sufficiently known and deemed suitable. With this, METEC's managers appear to have had the understanding that the generating of technology capability happens more efficiently, speedily, evenly and less expensively when built around consistent types of systems and when routinely locked into certain forms of expertise. According to the Director General of Ethiopian Power Engineering (interview reference: METEC-I9) competitive bidding processes in the procurement process were often violated due to the technology dependence and strong links with certain technology providers. This dependence has often resulted in, for example, METEC's management selectively appointing suppliers and service providers on a preferential bases, including procurement awards of up to an estimated 205 million Birr to one company 21 times and another 15 times (interview reference: METEC-I13).

In some other cases the technology purchases occurred on a piecemeal and ad-hoc basis, especially where uncertainties about the properties and quality of the technology still prevailed. A data set obtained from METEC of a list of 244 contracts in which the corporation entered into with foreign firms between 2009 and 2012 shows how attempts to enhance in-firm capabilities has happened through a number of mechanisms, including foreign licensing, co-production, copying and emulation, joint-ventures, and personnel training. Table 5.1 below summarizes these groups the contracts into different categories, including co-production of machinery, products or equipment; cooperation on a Ethiopian mega-project or ad-hoc project; capacity development partnership (training, certification, etc.); design partnership for a mega-project or equipment under development; purchase of intellectual property rights; turnkey solutions (pre-engineered and manufactured); production line establishment; supply of products, materials and inputs; licensing agreements; and strategic/technical/market plan and analysis. Most of the purchases of technology, materials and supplies originate mostly from China, which confirms Ethiopia's close cooperation with China in matters concerning technology acquisition. Other firms from Asian continent, including countries such as South Korea, Turkey, Saudi Arabia and the United Arab Emirates (UAE) and a few other European countries such as Italy and Germany are highly represented in METEC's technology transfer relationships.

Table 5.1: METEC's Contracts with International Firms (2009-2012)

Contract Type	**Technology Type examples**	**No. of transactions**	**Countries of Origin**
Co-production	Sophisticated night vision electronic equipment for the security field; Solar panels, pumps, streetlights, and other solar related products; SKD/CKD parts of Television , Set-Top boxes, etc.; military vest; Agricultural Machinery.	10	Turkey, Slovenia, Israel, China, UAE, South Korea, America
Cooperation	For production of Locomotives and EMU Trains; Establishment of joint working team on Projects; Electric power production .	8	China, Europe
Capacity Development Partnership	Develop aircraft manufacturing and overhaul capacity; Low, medium& high-voltage cable and wire production, transformer manufacturing, energy saving bulbs, establish new production	7	Hungary, Egypt, China, Israel, UAE

	facilities and provide training and technology transfer; Training METEC'S personnel in heavy machinery production; Qualification of IE and LPAD experts. Didactic qualification of trainers of trainers; Supply of Training instruments for manufacturing electric power meter.		
Design partnership	Power generation stations of various types for EEPCO; Aysha wind farms; Cement factories; Engineering design integration - SINO TRUK parts; Joint design and supervision for urea fertilizer plant (Korea)	15	China, South Korea, Ukraine, UAE, UK, Italy
Purchase of intellectual property	Transformer technology (design and technological documents, setting up of manufacturing facility equipment up to the level and standard of ETSL etc.	1	China
Turnkey solutions	Supply of pre-engineered buildings, including tell tower, power tower, wind farm towers, and high density insulation materials (Saudi Arabia)	19	China, Cuba, Italy, Germany, Saudi Arabia, South Korea,
Production lines	For defense electronic production such as communication equipment; rodas system ,EW system; heavy duty truck assembling and testing line	32	China, UAE, Switzerland
Supply of products, materials and inputs	130mm heavy artillery guns, gat special tools 130mm& accessories, ammunition, get 40mm under barrel gun& ammunition; Pre-engineered power transformers including transformer body switch gear and insulators	74	South Korea, China, Ukraine, Switzerland, Belgium, France, Turkey, Germany, Ukraine, UK, Cyprus, Sudan, Saudi Arabia, Italy
License agreements	SINO TRUCK concrete mixer body manufacturing plant; Truck assembling plant ; SINO TRUCK cabin manufacturing plant; Kamaz truck SKD/CKD assembly kits ; legal framework for the agreement for the realization of a minimum of 100,000 units of ICRs (special catalyst reactors for fuel conversion) under license production; KDV licensing agreement, including design, drawing,	41	China, Italy, Turkey, UAE, Serbia, Belgium, Russia, Germany

	software and training.		
Strategic/Technical/Market plan and analysis	Technical Consultation Service on the strategic plan for the development of national defense industry; Conducting analysis and developing global marketing strategy.	8	Hungary, Vienna, China,

Source: author's own formulation based on data obtained from METEC.

Apart from the supply of products, materials and inputs, a category which is significantly higher than all other groups of transactions, the highest share of technology purchases has been in the area of licensing agreements, followed by the installation of production and assembly lines for the various factories. Aspects such as co-production, purchase of intellectual property and design partnerships, for example, have been minimal in the corporation's list of transactions. This, as was confirmed by the Manager of the METEC R&D Centre (interview reference: METEC-I4), shows just how much the strategy has been less focused on innovation and new product development, but instead seems to lean more towards borrowing, copying and emulation. The data, which shows less innovation and more technology purchases on international markets, conforms with Prime Minister Hailemariam description (speaking at the Meles Zenawi Symposium in Kigali, Rwanda on 21 August 2015) of METEC's broad approach to technological acquisition as:

> *"I think the most important stage that you need to have technology accumulation is at the first stage where you have technology implementation and use capacity, rather than technology innovation. So we have to build (on) how to use already existing technology globally. (and) Through that course you start to learn, and trying to modify the technology to suit your own conditions. As you know we have already assigned the Metals and Engineering Corporation for this technology transfer and technology adaptation, again technology usage and go beyond modifications, and if possible there are technology innovations as well. So I think it's a ladder that you have to follow in doing so. We are in the right track doing this process and helping the technological capability accumulation"*

Technology selection came up as an important function of METEC's learning in the early phases, but has also been a great source of challenges for the corporation since the corporation has become better at picking the appropriate technologies for the right purpose, but not always

(interview references: METEC-I6; METEC-I7; METEC-I11; METEC-I12; Korea International Development Institute, 2013). For the GERD alone, METEC was involved in the procurement of around the 2300 machines. These different sets of technical, human resources and management processes that come with this procurement and maintenance work has been unprecedented in Ethiopia and is said to have pushed the country's technical frontier in various coordination procedures, recording techniques, and efficiency even further. With respect to the choice of technology partners and production partners from abroad, there have been some positive results recorded. Through partnerships with, for instance, well-known European tractor manufactures, AAMI has been able to foster in-firm know-how through the exposure of workers to skills and practices of international standards. They often bring with them their engineers who train METEC's engineers, and this has been one of the most fulfilling hands-on experiences that have been happening internally (interview reference: METEC-I6). For example, when Adama Agricultural Machinery Industry (AAMI) chose to work with a certain Polish and Chinese partners for the domestic assembly of factories, the subsidiary saw an immediate and tremendous uptake in the sale of its tractors between 2010 and 2013. This was, however, short-lived and was followed by a dramatic decline afterwards (Berhane, Dereje, Minten, and Tamru, 2017). According to the General Director of AAMI (interview reference: METEC-I6) this had a lot to do with a decline in marketing capabilities at the subsidiary where formerly it had done well.

For a Senior Engineer at METEC's R&D Centre (interview reference: METEC-I11), it had a lot to do with an inappropriate selection of partners, and especially Chinese companies in subsequent partnerships, that provide inferior quality components and inputs for assembly. As a result, AMMI's tractors, pumps, and other agricultural machinery fell out of favour with local farmers and a stockpiles and wastages ensued. Similar experiences of bad technology selection from international markets can be seen elsewhere in the corporation and generally indicate METEC's shortcomings in learning. In extreme cases, machinery and technology that was purchased for a number of projects or plants that turned out to be either obsolete, not fit for purpose or in some other cases a wasteful duplication of already existing technology. An example pointed out by the Manager at the HMMBI (interview reference: METEC-I7) that exemplifies bad technology selection concerns a machine bought on the third hand market from Turkey (after it had been in use in Germany) for the Bolt and Nut Manufacturing Plant in HMMBI turned out to be too old a vintage for the plant. Its frequent breakdowns caused

rigidities in the organisation of production and resulted in inefficiencies that arose out of the need to place the machinery under longer periods of downtime, frequent changeovers and repairs than is usually required.

While there wasn't any data found to show the distribution of transactions and, thus, changes in the technology acquisition strategy over time, The Manager of HMMBI (interview reference: METEC-I7) suggested that there has been a declining reliance on the procurement of external engineering services as more upgrading seems to now occur independently within some of METEC's plants. As an example, some of HMMBI's older conventional machineries for cutting and fusing metal profiles, which had become less reliable in precision, were formerly being upgraded from lathe machines to semi-computer numerical control machines in partnership with Chinese companies such as GSK[13]. The partnership with GSK, in particular, came about in 2011 for the purpose of training METEC engineers on how to do retrofitting in 10 different types of machines. In more recent times and after HMMBI had learnt to do the component replacements, conversions or refurbishments of the older machines on its own, it has had to rely less on external services.

A big part of the METEC's learning model is to train a domestic workforce in technical skills rather than rely fully on foreign capacity being provided by foreign sub-contractors. At one point the GERD had a total of 10 000 local workforce, and 500 expats involved in the project. In the early stages after the corporation's establishment, engineers made up ¼ of its 7000 workforce composition making METEC the corporation with the biggest concentration of engineers in Ethiopia (Ethiopian Society of Mechanical Engineers, 2010). By 2015, out of the 38 internationally licensed Ethiopian welders present at the time, 15 of them were METEC employees and 7 of those were assigned to the GERD (Ethiopian Herald, 2015b). To upgrade its workforce, METEC has occasionally sent its engineers to international higher education, with which it has MOU's, for specialized training (interview reference, METEC-I8). One of the subsidiaries that has benefited substantially from these partnerships is Hibret Machine and Machine Building Industry. HMMBI's relative progress in technological capability building can be majorly attribute its exposure to international best practices and skills through twinning with

[13] Whilst not totally obsolete, the machines were still operational, but required highly skilled operators for there to be accuracy in metal cutting and shaping.

similar large enterprises abroad and active efforts at looking to recruit or host international engineers and management experts, and increasing its openness for non-military personnel to fill engineering and other key roles.

A few years after establishment, METEC took a keen interest in becoming more involved in project execution by undertaking the construction of its own factory steel structures, which had been formerly undertaken on a turnkey installation basis by foreign companies. METEC also began partnering with its international partners in the construction of its own production lines, most notably where the Chinese company Poly Technologies was involved. According to the Manager the Ethiopian Power Engineering Industry as well as a Senior Engineer at the subsidiary (interview reference: METEC-I9; METEC-I12) this was useful in developing METEC's production capabilities since some of the engineers who were involved in putting together the assembly lines were subsequently managing production much better because of their intimate relationship with the technology at its set-up phase. METEC's involvement in some of the sub-elements of project execution during factory erection has given it's engineers the ability to undertake on its own the construction and set-up of its own other factories as well as for external clients, including the Jinka bag factory for sugar packaging, thus bringing to life its philosophy of "building factory while producing, and producing while building".

5.3 Diversification with uneven technological capability deepening

Since establishment, METEC has managed to expand from the original set of factories and plants that it had prior to its formation. It has done this by diversifying into new facilities that include production and assembly lines for automotive and locomotive vehicles of various types, power equipment, engines and machineries (see Table 5.2 below). However, a closer look into some of the specific sub-sectors reveals rather limited technological deepening despite the impressive facilities. Whilst the automotive sector has shown considerable growth over the years with respect to assembly operations, there is very little by way of local content. The General Manager of BAI claimed (interview reference: METEC-I5) that BAI's value-addition and local content in the overall automotive business sits at around 25-50%, but this cannot be easily verified as no data was found on local content figures. Although in a better position than the locomotive sub-sector, which seems stuck, there have been some missed opportunities in the production of

components such as spare-parts production, which could offer Ethiopia an entry point of learning for a more competent components sub-sector in the future. The power equipment sub-sector, on the other hand, holds much promise and the state has managed to partner with the private sector to fulfil the demands of the domestic market, but still suffers from low-quality issues.

Table 5.2: Major diversifications of METEC since post establishment

Year inaugurated	**Factory/plant**	**Location**	**Capability Accumulation**
2012	Wire and cable factory	Modjo town	New venture
2012	Heavy truck assembly factory	Bishoftu	Partnerships and licence agreements with international brands
2015	Construction machinery assembly and manufacturing plant	Debre Berhane	New venture
2015	Tatek transformer production line	Addis Ababa	Complete import replacement. METEC is now the sole supplier of transformers; sourcing them from its own production line and from a number of domestic manufactures
2015	Ursus tractor assembly plant	Adama	Castings for Ursus tractors are ordered from domestic manufacturers. Ursus is working with local manufacturers to develop capabilities in windshields, hoods, screws and the like.
2016	Locomotive assembly plant	Dire Dawa	Joint venture with Hungarian company, DANUBIA. Trial prototype lasted for four years, but limited progress has been made except in freight hauling wagons.
2017	Engine manufacturing plant	Mekelle	Assemblage, overhaul and upgrading of engines by sister company Bishoftu Automotive Industry since 2010. Obtained a license from largest Chinese engine manufacturing company – Yuchai

			and began trial production of engines.
2017	Cabin manufacturing plant	Addis Ababa	Started by importing the parts from China and Europe in 2011, now manufacturing cabins.

Source: Own compilation based on information collected from government policy documents, METEC quarterly reports, journalistic media, and interviews.

5.3.1 Automotive sector: Growing assembly operations amongst missed opportunities for spare-parts localization

The automotive business of the state in Ethiopia is focused at Bishoftu Automotive Industry. BAI has automotive assembly lines mainly for buses, trucks and four wheel drives. The components are received in a knock-down or semi knock-down condition and assembled in this plant. As such, since most of the components are imported, there is not substantial value addition (CSIR India, 2007). The BIA Manager (interview reference: METEC-I5) interprets the export demand of METEC's trucks by the United Nations in its peacekeeping endeavors in the region as a sign that their trucks are strong and durable. When METEC announced its commencement of trial production of engines in its newly-built Mekelle Engine Production facility in May 2017, this signaled a leap in technological capabilities that represents the government's vision for an automotive industry whose future focus would go beyond assembly operations and into automotive components. METEC's move to manufacture engines derives from the Bishoftu Automotive Industry, a METEC subsidiary, which has been involved in assembling of semi-knocked down vehicle kits as well as in the assemblage, overhaul and upgrading of engines since 2010.

METEC soon quickly obtained a license from the largest Chinese engine manufacturing company, Yuchai, and by 2019 the Mekelle Engine Production factory was piloting the production of small, medium and heavy engines for its sister companies as well as other private sector clients. The initial target has been businesses producing three-wheeled vehicles, pumps, power generators walking tractors, buses and trucks, and construction machinery such as loaders, excavators and graders. It is imagined that linkages will be bolstered between the engine production factory itself and other METEC subsidiaries and private sector firms since will

contribute significantly to upping the local content of the engines. The General Manager of BIA (interview reference: METEC-I5) mentioned that along with the cabin manufacturing plant, which was also launched in 2017, the engine manufacturing plant was a development that set the right conditions for technology acquisition and learning; enough to position Ethiopia at an embryotic, but promising stage in automotive manufacturing.

The General Manager of Bishoftu Automotive Industry (interview reference: METEC-I5) expressed the belief that a flourishing domestic spare-parts manufacturing business would lay the ground for the localization of components production in Ethiopia. The current inability to manufacture spare parts is rooted in past failures of the state to accumulate technology and expand in elementary automotive technologies despite some fairly favourable conditions since the 1990s. The manufacturing experience held by the Akaki Spare Parts and Hand Tools firm is foundational to most of the capabilities that exist today in METEC's transport and power equipment subs-sectors. AKAKI is in many ways a precursor for much of the gradual and accumulated learning, upgrading and linkage formation in both these sectors. The automotive sub-sector has, however, exhibited less progress from a value-addition point of view in comparison to the power equipment sub-sector for instance (see section 5.3.3 below). The most value-addition in the automotive sector is in the area of cabin manufacturing. This is so even though it has far deeper manufacturing experience and was by 1995 already favorably placed to move beyond assembly operations and into components manufacturing, since it was already at that stage a "complex engineering plant with foundry, forging machining, heat treatment and chrome planting and phosphating shops" (Geletu and Habtu, 1995:10).

The plant had the basic pre-requisite manufacturing means and processes existing such as casting, forging, machining, heat treatment, surface treatment, sheet metal forming, tooling, welding, assembly and paintwork needed for component manufacturing. With these capabilities in place it was already producing spare parts products like crankshafts; transmission and suspension parts such as shackle, central support, brushings; U-bolts of the suspension system of heavy trucks; brake drums; and supplying the Ethio-Djibouti Railway Company with cast brake shoes, as well as acquired the technology for making good castings. By supplementing the then-existing machinery and equipment, it was both feasible and viable for AKAKI to move into drop forging press with induction hardening machines (installation); pistons; gears for transmission

(the plant already had gear hobbling machines for spur, helical and bevel gears, as well as idle gear shavers); Axles and axle stubs; and castings for brake pads (Geletu and Habtu, 1995).

According to Geletu and Habtu's (1995) projections, it would have been possible to manufacture front wheel spindles, steering parts, and universal joint parts with the addition of a forging press, and gear grinding machines and equipment for spiral hypoid gears. To compliment the state's potential, some private companies were, in fact, already producing other spare-part components such as leaf springs, car batteries, tyres, foam, and steel tubes. There were also up to date facilities and the know-how had been built by firms such as Mesfin Industrial Engineering or Maru Metals for the production of car and truck bodies that made it viable to deepen capabilities a little bit further.

However, interviews with experts at the Ministry of Industry (interview references: GB-MOI1; GB-MOI2) revealed two main reasons that could explain why METEC, even in its pre-incarnation as AKAKI, did not pursue the manufacturing of these components. A historical glance back into the 1980s and 1990s reveals that Ethiopian state-owned enterprises have generally had a love affair with highly diversified plants that do not keep their product mix at reasonable levels. The AKAKI plant, for instance, which is equipped with conventional and general purpose machines was originally designed to produce an estimated 200 000 mechanical parts per year of about 3600 types that differ in shape, dimensions, manufacturing processes and product quality. AKAKI continued to dedicate a significant portion of its time and resources to simple technologies and products despite the proven capacity of smaller private workshops, that were at the time working on jobbing orders, to handle these product segments. This prevented AKAKI from moving into a focus on higher technology segments such as automotive parts (Mekonnen, 1995).

The Kality government-owned firm, on the other hand, which produced its own machinery, such as a complete sheet metal rolling line and presses, is said to have still been in efficient use some 30 years later after its establishment. Kality, to its advantage, appears to have relied on the technology internalisation route favoured by the Ethiopia Society of Mechanical Engineers (interview reference: PS-ESME-1). However, AKAKI seems to have been particularly constrained in dynamism because the components recommended for production by the UNIDO study consist mainly of steel-based inputs, which are generally known to face raw material

constraints in Ethiopia. Secondly, the government was unable to secure a collaborative relationship with a well-known car manufacturer for technology transfer, technology assimilation and for gradual skills development. The government's role in the assembly business only started showing signs of robustness after METEC had been established in 2010. Bishoftu Automotive Industry's (BAI) then quickly moved into the manufacturing of bus bodies mainly for the Addis Ababa public transport network. Soon after, METEC came under fire for the poor quality of the buses. However, The General Manager at Bishoftu Automotive Industry (interview reference: METEC-I5) claimed that substantial improvements have since been made on, for example, the mechanical parts of the automatic transmission and air suspension systems over the five-year period since the first busses were first assembled.

BIA is one of the few METEC subsidiaries that have adopted the Kaizen implementation with the aim of improving on a number of key performance indicators, including quality. However, according to a senior expert at the Ethiopian Kaizen Institute (interview reference: GB-EK-2) BIA had some challenges implementing the programmes due to organizational rigidities that prevail within the subsidiary. The expert argued that many firms in Ethiopia, including METEC, generally lacked "Kaizen of the mindset" which, in her view, should be seen as step one and a pre-requisite for the formal implementation of Kaizen principles (quality control, wastage reduction, cost control, inventory control, etc.). The factory observations made during a tour of the BAI industrial compound confirmed just how much of a gap there was in the application of Kaizen principles. The implementation lacked consistency, coherence and seriousness and was for the most part unorganized.

The senior expert at the EKI (interview reference: GB-EK-2) described the problem of slack implementation of Kaizen in the following way:

> "First the attitude of managers is that they are afraid that the successful implementation of Kaizen will bring to the surface many problems, and they may lose their jobs as a result because they will be deemed as having been the problem for underperformance. Second, managers have tended to involve workers up to a certain point when it comes to creative and innovative solution-finding and so, since Kaizen is very participatory and actively involves both managers and workers, managers have been fearful that they will be replaced as workers become more and more competent and confident. This limits the

learning process. Third, managers often claim that the process is intrusive on their work and is a waste of time. The time that experts spend training workers is time lost on the factory floor where work could be going on. Fourth, the fear of change and learning new processes is not very attractive for certain managers".

When it comes to the private sector automotive business, assemblers have grown in number from one or two to a handful over the last decade. The current assembly operations in existence are engaged in the assembly of different kinds of vehicles passenger and commercial vehicles such as sedans, sports utility vehicles (SUVs), trucks, and busses, many of them in joint-venture partnerships with Asian and European brands. A positive sign of learning, however, in the assembly business of the private sector is that most of the assemblers started as sales agents for some of the top automotive international OEM brands. They then went on to obtain investment licenses and successfully partnered with the OEMs after successfully courting them (Table 5.3 below). There has, however, been limited localization of spare parts much like with METEC's automotive business. Although the government has signalled intention to support the development of a more viable automotive space in Ethiopia, it is yet to take measures, such as putting a ban on second-hand imports or introducing incentives that would promote the emergence of parts suppliers for domestic after-sales market. As such, it is likely that key components will remain imported, with no substantial value addition on the vehicles as is currently the case (CSIR India, 2017). However, the example of the government procuring an upward of vehicles from Beyalab Motors shows that some local procurement policy is developing to encouraging to the private sector. In fact, a decree was issued by the government that any future automobile purchases have to be procured entirely from local assemblers or manufacturers to stimulate Ethiopia's automotive industry (Ethiopian Herald, 2018).

Table 5.3: Selected joint venture partnerships in the Ethiopian auto assembly business

Brand	**Core business**	**Ethiopian co-investor**	**Original operations by Ethiopian co-investor**
Iveco, Toyota, Sino Truck (Chinese)	Buses, trucks and four wheel drives.	METEC	Incorporated into METEC in 2010, but was first initiated as garage facility in the 1990s

Automotive Manufacturing Company of Ethiopia (AME)	Trucks	Ethiopian government	1970 as importer and assembler
Peugot, Geely, Man Trucks and International Tractors of India	Passenger vehicles, trucks	Mesfin Industrial Engineering	1992 as importer and assembler
KIA (South Korea) in 2016	Passenger vehicles	Beyaleb Motors	2006 as an importer and distributor of light, medium, and heavy-duty trucks and industrial equipment.
BYD Auto (Chinese) – plant inaugurated in 2013 in Adama	Passenger vehicles	Betret International	2002 as an importer and distributor of various industrial goods, trucks and vehicles.
Hyundai (2019, first factory in East Africa)	Passenger vehicles	Marathon Motors Engineering (former Olympian Haile Gebrselassie)	2009 as official general importer of Hyundai cars

Source: Company websites, newspaper articles, government reports and academic publications

5.3.2 Locomotive development: stuck in reverse gear

When the Addis Ababa Light Rail Transit (LRT) network and the railway line running between in-land in Ethiopia and the Djibouti port were built, the Ethiopian government flirted with the idea of using METEC to develop the railcars and freight-hauling wagons. The original plan had been for METEC to learn how to develop train carriages and related technologies. In addition, the strategy also had plans to include specific help for local metal manufacturing and electro-mechanical companies to produce materials for railway network development. The light railway network initiative in Addis Ababa was supposed to involve about 50 companies working on design and construction of network and more than 20 manufacturing companies producing spare parts and providing metal and engineering and electro-mechanical services (FDRE, 2010). The only item that currently preoccupies much of METEC's locomotive plant is the manufacturing of freight-hauling wagons. The failed railcar development project, on the other hand, is an illustrious example of a window of opportunity that was temporarily open for learning and development of local capacities, but did not succeed in taking-off despite a prior commitment by the government to develop in this direction. The window was shut half-way through the process in 2014 with a sudden and abrupt announcement from the government that a Chinese company

had been chosen in replacement of METEC to supply the light rail vehicles (Interview reference: METEC-I4; MF-MZF-1)

According to a Director at the Meles Zenawi Foundation (interview reference: MF-MFZ-1). A group of about 200 engineers and technicians from METEC were sponsored to go and study in Russia at a locomotive manufacturing school with the idea that they would come back with the knowledge that would help Ethiopia become the China for the rest of Africa and build trains for neighbouring countries once Ethiopia had developed those capabilities. The other possibility was that Ethiopia could subsequently help neighbouring countries to develop their own railway technologies. Indeed, METEC had already begun to receive attention from neighbouring country leaders, such as President Paul Kagame of Rwanda, who came to Ethiopia with a keen interest on creating partnerships. Just about when METEC was finalizing the four-year long learning processing of designing and prototyping the rail cars, the government decided that it would instead procure the rail cars and related equipment from China with very little explanation other than citing the urgency of rolling out the light rail facility in Addis Ababa.

5.3.3 Power equipment: Learning dividends from a monopoly rent

The manufacturing of power equipment by METEC displays a relatively more robust path in terms of the gradual accumulation of capabilities and sequential internalization of technology acquisition in comparison to the other sub-sectors. One METEC's earliest and notable achievements in relation to power generation has been the electricity upgrades at both the GERD and Omo Kuraz I sugar factory or efforts applied into introducing and upgrading new products that are destined for consumer markets there have, evidently, been moments of learning and adaptation. Upgrades of the electricity generation capacity are one of the design changes that the GERD and the Omo Kuraz I sugar factory have had to go through over the course of their construction. Whilst the proposals to implement these upgrades were challenged by some within the government as unnecessary and not useful, METEC has gone to claim victory (interview reference: METEC-I4). An important part of this celebrated achievement, in the eyes of METEC, was the upgrade on generators resulting in an increase in Ethiopia's power generating capacity from the 5250 MW initial capacity to 6000MW first, and then recently to 6450 MW. The corporation achieved these upgrades in a space of a year after the dam project was unveiled

showing quick progress in learning. As a result, METEC reportedly saved 4 billion birr from the initial budget held for the project (Tariku, 2014).

A similar achievement was made at the Omo Kuraz I factory's crushing and energy production facility, where METEC reportedly improved both electricity generation and crushing capacity from 40MW and 10 000 tonnes to 45MW and 15 000 tonnes. According to the General Manager of the Research and Development Center, (interview reference: METEC-I5), these upgrades were a difficult part of the learning curve since the realignment involved technical complexities that METEC had not anticipated. To a large degree, the process of technological capability building that has happened within METEC and the surrounding ecosystem of domestic firms has placed Ethiopia in a better position to execute important components of large-scale domestic projects much more successfully.

Upon METEC's establishment in 2010, the sale of low and middle-voltage transmission accessory and spare parts already constituted about 65% of AKAKI's total sales and these products were mostly destined for the Ethiopian Electric Power Corporation (EEPCo) (JICA, 2010). By the year 2014, Hi-Tech Engineering, a METEC subsidiary, which manufactures electronic and electromechanical technology products using inputs from sister companies, Ethio Plastics Industries, Metal Fabrication Industries and Hibret Machine and Machine Building Industry had already supplied 10,000 transformers to the Ethiopia Electric Utility (EEU), which is responsible for the national smart grid system. The first step in the domestic manufacturing of transformers began with an MOU between Akaki and an Israeli company called Arden, which was signed prior to 2010. At the time, AKAKI was only engaged in the production of the container body of the transformer with steel plate working technology that they had acquired. The next stage of domestic production, the core-part of the transformer, was made possible by the partnership between the Tatek Transformer Production Factory (inaugurated 2012) and Arden, as well as domestic manufacturers of conductor wires and cables in Ethiopia such as Euro Cable and Elsewedy Cable (JICA; 2010; CSIR India, 2017). With the combined capacity between the state and private sector companies such as Sunrise Engineering, Ethiopia has now achieved total import replacement of transformers (interview reference: METEC-I12).

Over the years, however, there have been complaints about the quality of METEC manufactured-products, such as the signaling and communication cables for the Addis Ababa Light Rail Transit (LRT) network and the METEC-manufactured transformers. Customers have often claimed that the products or parts of projects installed with METEC products need frequent repairs due to the supposedly inferior quality of inputs. Concerning transformers, a decent measure of gauging the quality of transformers, according to Temtin (2017), is the amount of permanent failures experienced. Although there is no baseline to make comparisons on improvements, the quality of transformers manufactured by METEC is, however, not too far from those imported from China or India, for example. In fact, when looking at the rate of permanent failures experienced by METEC transformers vis-à-vis China and, there is only a 6% and 8% difference, respectively (Temtin, 2017). Overall, the problem in the power equipment sector points to how even when the domestic market has signaled an acceptance of some of METEC's products, the corporation has failed to pay adequate attention to issues of quality and durability. An expert and engineer at the Metals Industry Development Institute (interview reference: GB-MIDI-4) argued METEC needed to shift away from an internal assessment process towards a more independent process of standards and quality tests done by the Ethiopian Conformity Assessment Enterprise as is the case with private producers if it wanted to improve its quality.

Another area of production where METEC claims substantial progress is in the domestic manufacturing of electric meters. The journey began immediately after 2010 with the government's decision to "instruct EEPCo to use local materials for its projects to support the development of local industries" (World Bank, 2013:13). This came at a time when METEC had just entered the smart meter manufacturing business. METEC was chosen as the preferred and sole supplier to EEPCo against the advice of the World Bank, which had "underscored the risk of the project outcomes in terms of the quality, reliability and timely delivery of meters" (World Bank, 2013:24). EEPCo was forced into changing the usual course of direction that follows "international competitive budding" practices which had previously resulted in cost savings from "lower-than-expected-prices" on international markets. However, since METEC was itself still only learning how to manufacture electric meters, the result was a failure to deliver and install the electric meters within the promised timeline. EEPCo was, thus, backed into a corner and had to make an urgent and alternative deal with an Indian company (Gebregziabher, 2019) for the

import supply of the electric meters. METEC does, however, still maintain monopoly over the supply of meters and has in recent years partnered with a local smart meter manufacturing company, d'Ventus Technologies, which sprung out of a research and prototype development institute (interview reference: DPSF).

5.4 Sub-contracting as technology capability development

METEC claims to have signed contracts with over 700 companies, including over 150 companies in the metals and engineering sector (interview reference: METEC-I2). These firms vary with respect to profile, focus, size and activities and include big equipment manufacturers and many other medium-large local firms mostly through subcontracting and outsourcing. Whilst the establishment of much of the bigger players that have been sub-contracted to METEC dates back to the 1990s and the 2000s, much of the capabilities and learning that they have acquired emanates from their involvement in METEC's plant-level projects and in the various mega-projects.

A number of these firms (Table 5.4) have gradually joined the ranks of important players that were cited in Sutton and Kellow's (2010) Enterprise Map of Ethiopia that had identified leading firms with impressive technological capabilities in the metals and engineering sector. Through their interaction with METEC as manufactures, assemblers, providers of inputs and engineering services and other roles such as design and supervision many firms have upgraded their capabilities and learnt new competencies in line with the demands and complexities of Ethiopia's industrial and infrastructural projects. The experienced gained there has allowed them to acquire big opportunities with other government clients that would not have ordinarily been available to them prior the learning acquired from METEC's sub-contracts. As a result cross-fertilisation of learning and economies of scale are beginning to emerge as opportunities for domestic firms multiply.

Table 5.4: Selected domestic firms in capital equipment manufacturing/assembly

Company	**Year established**	**Learning and capabilities acquired from METEC projects**	**Other government clients**
Omicron	2008	Assembling of electrical power distribution panels (4000 VA) for METEC's cable factory in Mojo (first kind in Ethiopia to be assembled locally)	Ethiopian Airlines (supplier of electric power distribution panels)
MH Engineering	1997	Design and supervision of Beles 1, 2 and 3 & Omo Kuraz Sugar Projects	Consultant on the Hawassa Industrial Park construction; Federal Sports Commission 40 million Br contract to MH Engineering Plc for the design, supervision and contract administration of Ethiopia's largest stadium; Garment factory sheds manufacturing for Bole Lemi Industrial Zone
Mesfin Industrial Engineering	1993	Signed ETB 3 billion ($162.2 million) worth contracts with state-owned enterprises to deliver boilers and other industrial equipment and machineries for the Tana Beles Integrated Sugar Development Project (Tana Beles II) and the Kuraz Sugar development projects	Bole Lemi Industrial Zone; Afar National Regional State-Ethiopian Airports Enterprise
N.A Engineering	2007	Sugar factory diffuser plant at the OMO Kuraz Sugar factory	N/A

SIGMA Electric PLC	1999	Earthing system installation for the GERD culverts and turbines	EEPCO, Ethiopian Airlines
KG Engineering PLC	1986	Manufacture of sugarcane crushing machines (cardinal and pusher drums, feeder chain (conveyor), bending and rolling 30mm thick sheet plates. In 2014, the company started a crane manufacturing production plant, and METEC was is one of its biggest clients with a 23-million Br initial contract or 10 cranes	N/A
Silverstar Engineering	2011	Supply of mobile cranes to METEC for various projects. (Learning has led the company to set up machinery assembly and manufacturing program that introduces local brand equipment through acquiring international equipment on joint venture base).	Corporation with various local government agencies (undisclosed).
BEYO PLC	1998	Assembly and delivery of heavy duty construction machineries. Initially, importing components and assembling refrigerators by LIEBHERR. In November 2012, the company started assembling earth moving equipment with imported parts	N/A

Source: own compilation from company interviews, data gathered from print media, company profiles, and government reports

Mesfin Industrial Engineering (Table 5.4) and SUR Construction (Table 5.5) are curious cases since they are linked to the TPLF-owned endowment firm, EFFORT, which is often perceived as particularly favoured by the government in the awarding of contracts. A closer look at the two companies shows that they have over the years established considerable capabilities in manufacturing equipment for various industries as well as experience in hydroelectric works;

giving them an advantage over most other domestic firms in the metals and engineering sector. Initially Mesfin Industrial Engineering had little past production experience in equipment for bending strong steel of 30 mm or greater thickness. MIE also was also only in possession of X-ray inspection that could handle steel of up to 25 mm in thickness. Over time it introduced high performance equipment that gave the corporation ability to handle materials that have thickness of between of up to 40 mm (JICA, 2010; interview reference: DPSF).

One particularly interesting feature about SUR construction, which makes the company stand out from other domestic contractors, is how it has differentiated itself and narrowed its competition by restricting "its bids to public tenders worth one billion birr or more, thus reducing its competition with local firms and taking on the dominant Chinese state contractors instead" (Weis, 2016: 298). Similarly, other EFFORT-owned companies such as Massebo Cement that are highly involved in mega-projects have been hand-picked as the sole cement supplier for the GERD due to their distinct expertise. The Italian company Salini Impregilio had carefully considered that Massebo-produced cement is that it is of a special crack-resistant type (Low Heat Portland Cement) and had been quality-certified in both Ethiopia and abroad (Tesfai 2012; Koenig, 2018).

One of the other key elements of the technological capability building aspect of the government's approach has been the relatively new practice of giving preference to local consulting firms to supervise big projects. As a result, domestic companies have gained significant learning from their prominent role in supervision. For the sugar factories, for example, firms such as the Ethiopian Waterworks Design & Supervision Enterprise (EWDSE) and the South Waterworks Construction Enterprise in association with the Indian Consulting Engineering Service (CES), have been commissioned for surveys, assessment and planning studies since 2010/2011 (Kamski, 2016). The Addis Ababa Institute of technology (AAiT) has also played an important role as a consultant on the project sugar projects as well as the Yayu Fertilizer Project (Fortune, 2015b; Ethiopian Herald, 2015c).

The Addis Ababa Institute of Technology and Mekele University's Technology faculty are perhaps one of the most important institutions for the enhancement of capabilities at institutions such as MIDI due to their immersion in industry-university linkages. MIDI, METEC and private sector firms in the industry largely draw talent from the mechanical and electrical engineering

graduates from these two institutions. The AAiT and Mekele University are particularly special because they have an appreciation for the importance of their role in the translation of knowledge to industry, skills development, technological interventions and import substitution (CSIR India, 2017). Some examples of MOU's between METEC and local universities include a partnership with Mekelle University for expertise development in the area of construction machinery production and factory erection; a corporation works partnership with Debre Markos University in the design and technology formulation of tower cranes; and one with the office for Research, Technology Transfer and University Industry Linkages of Addis Ababa Institute of Technology.

The Director of the AAU University-Industry Linkages and Technology Transfer Office (interview reference: U-AAIT-1) mentioned that whilst a wide array of opportunities have been presented by METEC or the private sector to academics, the process of moving research topics into a level of maturity ready for bulk manufacturing or production through university-industry linkages in Ethiopia had been slow. By 2018 only 5 projects have been selected out of a total of 42 applications since Addis Ababa University's Technology Business Incubation (TBI) center came into operation. Of these is the design and construction of a prototype welding transformer by two academics of the university. In my visit to the Technology Business Incubation Centre I witnessed outdated technologies and shortages in equipment, materials and financial resources. The manager of the center (interview reference: BIC-AAUBIC-1) cited that the majority of its funding comes from the Swiss Agency for Development and Corporation as donations with very little commitment from the University's budget. The Director of the AAU University-Industry Linkages and Technology Transfer Office (interview reference: U-AAIT-1) suggested that the although a specialized certificate training programs specific to the capital goods sector such as manufacturing and product engineering had been created, public enterprises have often taken greater advantage of these by enrolling their workers and managers more than the private sector.

METEC has also played an important role in the upgrading of the capabilities of civil engineering firms (Table 5.5). According to the Construction Professionals Company and Construction Machineries Industry Development and Regulatory Bureau's database, there were over 11000 registered contractors in the year 2016. Of the registered contractors, 140 were in the grade one category of licensed contractors, which is the highest level of competence a contractor

can obtain. Under this category, the sub-contracting opportunities under METEC launched many firms into new areas where they had previously not been exposed to. Many firms upgraded their capabilities to rise to the demands of new processes and have, thus, been subsequently awarded significant parts of complex government projects such as road, rail, subsidized housing, industrial park building, and other infrastructural projects. The most lucrative government contracts are, thus, seemingly awarded to the same group of firms, and perhaps with even far greater amounts than those linked to METEC contracts.

In the initial stages it appears that METEC's practice of awarding contracts to contractors and sub-contractors for the various mega-projects was sufficiently aligned to the Ethiopian government's procurement regulations that require certain bidding processes to be followed. For instance, in 2011 METEC issued an invitation to the entire 82 grade one licensed domestic industrial construction contractors in the country at the time to participate in various projects. The process was highly competitive and transparent and 44 companies are said to have presented their proposals leading to a selection of 10 companies for participation with 3 from those turning down the offers. The selection criteria is said to have been strict with 15 requirements being considered, including track record; audit reports; number and type of projects at hand; as well as machinery and human resources availability (Fortune, 2012). While METEC claims not to make major compromises on the selection of contractors, particularly for aspects that are technologically challenging in the various mega-projects and products, it has over time dropped its strict adhesion to a strictly competitive and transparent bidding process, which has often led to allegations of corruption. The Transformation Director at METEC (interview reference: METEC-I2) mentioned that while there had been a problem of irregular awarding of contracts, METEC has tried to deal with the problem of corruption by prohibiting any officials that are currently under the employ of METEC from having their own companies.

Table 5.5: Selected Civil Engineering Firms Sub-contracting to METEC

Company	**Year established**	**METEC projects**	**Other government clients**
Felema Construction	2010	Dozen civil works contracts that form part of the Yayu Fertilizer Complex	Bole Lemi Industrial Zone projects

Aser Construction	2009	Internal asphalt road overlay work for Bishoftu Automotive Engineering. At the end of January 2018. Launched its 2nd concrete pipe plant specializing in reinforced concrete pipe.	N/A
Sunshine Construction PLC	1984	Several road and civil works in METEC projects. Sunshine is currently teamed up with Globeleq – one of Africa's leading power companies to establish a 100MW IPP solar park in Ethiopia.	Residential housing for government housing scheme. A number of roads
Tekleberhan Ambaye Construction Plc (TACON)	1993	Various civil works for sugar projects such and construction of the structure of the buildings. TACON in turn subcontracted some minor works to 12 local SMMEs	Construction of various highways and airport runways, civil works on railway and water projects; massive earthworks; specialized pile foundation excavation services; and industrial plants.
SUR Construction	1992	Contracts from the state-owned Sugar Corp. and METEC to work on a sugar plant at Welkite in the Ethiopia's northern Tigray region	Construction of over 100 different projects consisting of 41 road projects including the longest river bridge in Ethiopia, 50 multi-purpose building projects, 3 hydropower projects, 2 airports, 2 dam projects and I irrigation project
Other smaller firms who have had to do joint work together include	Various	Civil construction work for sugar factors, flexible workshops manufacturing, etc.	Various

ZAMRA Construction, Deta Engineering, Equitorial Engineering, Yoteck Construction, Radar Engineering , Sahle Mariam Construction, Rama Construction, AT-CON Construction			

Source: Author's own compilation from company interviews, company websites, newspaper articles, and government reports

5.5 Incubation for R&D and Skills Development

METEC has been actively involved in the development of many of the smaller private firms in the metals and engineering firms which mostly begin as start-ups, garage workshops or small enterprises. A significant part of Hibret Machine and Machine Building Industry's (HMMBI), which was visited, focus is to forge partnership with small firms with the purpose of helping them develop technologies for private commercialization as input supplies for METEC (interview reference: METEC-I7). HMMBI does this by designing prototypes and spare-parts for both simple and complex components and machineries for various sectors, including the following: sugarcane crushing machines, agro-processing machines, salt iodizing machines, semi-CNC welding machines for cutting and fusing profiles, cassava processing machines, drilling machine parts, sheering machine parts, etc. (Images 5.1 and 5.2). The Manager at HMMBI (interview reference: METEC-I7) expressed how management has often marketed the METEC as "the second home for the private sector" in attempts to establish collaboration

opportunities between the corporation and the private sector. Whilst there have been notable successes for some joint projects, which has led to commercialization of the prototypes, the relationships are not always fruitful due to a lack of trust, delays on the side of private firms in meeting project deadlines, higher-than-import prices on the inputs sold to METEC as well as issues of sub-standard quality.

Images 5.1 and 5.2: Prototypes under Research and Development



Stone crushing and cutting machine



3-rod sheet rolling machine

Source: taken by author during fieldwork

The training of graduates and young entrepreneurs by METEC has been made possible mainly through the creation of 'flexible workshops' which equip them with technical skills and technologies in the specialized area of metal work and engineering. The corporation created approximately 5 cluster-like workshops that each employs approximately 100 graduates in each of the regional states. Hand tools and machines are provided to each workshop (around 70-80 per workshop) for 'fabrication' and 'production' where the graduates can produce simple components for other industries, spare parts, equipment, aluminum moulds, and similar products. The various METEC subsidiaries serve as the main subcontractor to the flexible workshops, but the workshops are encouraged to look for private sector markets as well. The Manager at Hibret Machine and Machine Building Industry (interview reference: METEC-I7) mentioned that the workshops, one such built close to the GERD, were established as a way of dealing with capacity

shortages in skills and production in anticipation of METEC's growing need's going forward. The workshops have been under the spot light for their supposed failure in achieving their goal, but the General Manager of HMMBI attributes the challenges to teething problems that were being dealt with. METEC also regularly gives training and supplies tools and equipment to technical vocational and training (TVET) colleges and other government-owned training centers for graduates, trainees and technicians. Machineries provided by the corporation include agro-processing machineries, preserving equipment, sowing machines, and leather product equipment that have either been designed and built at METEC or assembled there (interview reference: METEC-I7). In a move to integrate research linkages between universities and industry, the government allocated 33 million birr for research in Ethiopia's higher education institutions for the purpose of integrating universities into various mega-projects, facilitate know-how and technological transfer, and localize the learning experiences that have been gained in the mega-projects (Ethiopian Herald, 2015).

METEC reportedly has one of the largest youth development programs in the country. The programme targeted street youths and trained them in technical skills at the Addis Raey Training Center at Hibret Manufacturing and Machine Building Industry and creating employment opportunities in the various METEC workshops. The programme is reported to have brought about significant changes on the socio-economic conditions of those involved. In the first year of the programme in 2013, the center boasted the graduation of more than 2500 street youths (Gezahegn, 2014). The initiative, however, according to the Director and Researcher at the Meles Zenawi Foundation (interview reference: MF-MZF-1) faced an ideological backlash from some non-governmental organizations that started lobbying against METEC's training initiative because it was perceived as infringing on their territory.

METEC currently fills the gap in the area of agricultural mechanisation, seeing that the governments' efforts at promoting research in agricultural mechanisation have been quite limited. A protocol agreement that was reached between the Ethiopian Institute of Agricultural Research (EIAR) and the Ministry of Industry (MOI) as an attempt by the Agricultural Implements Research and Improvement Centre (AIRIC) of the EIAR to promote research in this area by giving drawings and prototypes of plough, ridge-tier, donkey cart and threshing and shelling machine to Akaki Spare Parts and Hand Tools factory did initially foster some learning.

Some first batch prototypes were produced, but the work was not pursued further due to the low allocation of a research budget (less than 2%) towards agricultural mechanisation initiatives.

Interviews with senior policy officials, experts and industry managers (METEC-I6; GB-MoST-2) suggest that in the place of a much more coordinated agricultural mechanisation strategy that brings together the relevant science, technology, innovation and industry stakeholders such as the Ministry of Agriculture and Natural Resources (MANR), Ministry of Industry (MOI), the Metals and Industry Development Institute (MIDI), the Farm Mechanisation and Conversation Agriculture for Sustainable Intensification (FACASI) Project, Ethiopian Institute of Agricultural Research (EIAR) and METEC much more coherently, there have been largely piecemeal interventions, workshops and dialogues on an ad-hoc basis with little impact in moving agricultural mechanization and development of enhanced technologies forward.

Similar issues have been registered in other projects where promising prototypes are developed but were soon abandoned. The wind pump manufacturing project that was being developed by the R&D unit jointly managed by the Ethiopian Water Works Construction Authority (EWWCA), Water Supply and Sewerage Authority (WSSA) and the Ministry of Water Resources (MoWR) in collaboration with a private company, Equatorial Business Group (EBG) PLC, is one such example where a successfully reverse engineered water pump could not be explored beyond prototype phase. This was due to efficient minimum scale for production not being met either because of an insufficiency in resources in the pioneering companies or discontinuation of funding and support by the government (Ethiopian Society of Mechanical Engineers, 2017). In other cases, the continuity of projects has failed because the research and development process is too person-dependent, which results in doubts about the viability or sustainability of the project emerge after the key people responsible for driving the project are no longer available (Ethiopian Society of Mechanical Engineers, 2010).

Images 5.4 and 5.5: Manufactured Parts at Hibret Machine and Machine Building Industry



Drilling machine parts



Sheering machine parts

Source: own pictures taken during fieldwork

These failures reveal a broader problem of an inability to make constructive inter-linkages across key agencies and ministries, universities, technology, science and research institutes, enough to support the vision of leading a metals industry revolution. The mistake, according to METEC management (interview references: METEC-I2; METEC-13) from the beginning was that not every ministry/agency/institute handling the country's technology or industrial and economic development portfolio was provided with clear terms of reference on METEC and this has resulted in policy disarticulation across government. The Ministry of Science and Technology's (MoST) Iron and Steel Technology Roadmap (2017) does admit to the weakness in linkages between the Ministry of Science and Technology, MIDI and METEC, which are all the key institutions for the government's objective of developing key technologies and carrying out R&D in the iron and steel sectors for Ethiopia. The roadmap is, however, merely being diagnostic and devoid of a coherent plan of action to bring greater alignment and inter-agency coordination. The Technology Transfer and Development Director General in the MoST (interview reference: GB-MoST-1) also pointed out how the ministry has been operating in its own silo and thus ignorant and unaware of the country's technological capabilities and where they are situated. This has often led to a number of issues such as duplications of efforts in R&D for technologies that could be synergistically developed, wastage in resources and a lack of collaboration with other related institutions on technology development.

5.6 Synthesis

What this chapter has revealed is that METEC, as an instrument of the Ethiopian developmental state, illustrates the vision of a distinctive and novel approach in the way that Ethiopian state has sought to leverage an SOE. METEC is rather atypical in Ethiopia's industrial policy, because it is a Petri dish designed not only to focus on the design and manufacturing of fairly complex consumer and capital goods for individual consumers and the state's infrastructural projects, but to also act as the patriarch of indigenous technological capability development, both internally and external to the corporation, but also play a mid-wife and husbandry role by drawing domestic capital into complex manufacturing and be an anchor for the alliance between local and foreign capital; all the while itself engaged in the continuous process of learning.

As the slogan of the corporation "learning as we do, doing as we learn"— suggests, it is clear that METEC was cognizant of the fact that it needed to learn. The corporation was also aware that it could not do things on its own, hence the attraction of foreign firms as technology partners. METEC has played a significant role in identifying equipment, components and accessories that can be manufactured locally, as well as to specifying, selecting and importing components, machinery and equipment that cannot be sourced locally from reliable foreign suppliers/manufacturers. Linkages have been observed between different sections of METEC, foreign investment, and the domestic private sector, but they are not always efficiently tied together.

Considerable attempts have been made to and some successes registered in relation to the expansion, reorganization and reconfiguration of original plants integrate their production structures into both older and newer sister plants, as well as to absorb the changes required to manufacture more complex standard equipment technologies and product mixes. There has, however, not been a clear and well-articulated policy framework that dictates the diversification and technology selection strategy. While Ethiopia's technological capabilities have been bolstered significantly, the technological adoption process has progressed in a haphazard and uncoordinated manner. Many critical and viable opportunities still remain unexploited or neglected and the pace of learning has tended to be slow as evidenced by a number of incomplete projects.

Chapter 6

Through the Prism of Reciprocal Control Mechanisms: Challenges to getting the governance capabilities right

"The relative paucity of successful infant industry programmes demonstrates the difficulty of getting the governance capabilities right for ensuring successful outcomes in these public financing strategies. Clearly ensuring high levels of effort in these learning processes is by no means a simple affair" (Khan, 2013: 29).

6.1 Introduction

In chapter five it was shown that, despite there being learning and technological capability among domestic firms in the metals and engineering sector, there have been considerable challenges to that learning. To understand the factors that underpin both the negative and positive outcomes the questions that have emerged and which this chapter has sought to answer are: did the rents directed to METEC and the private sector come with appropriate and enforceable conditions that create credible compulsions for effort? What have some of the difficulties encountered by ruling elites in the enforcement of learning been, given the political connections of METEC or private sector firms? What is it about the Ethiopian institutional setting, specifically in relation to industrial policy, that has led to unsatisfactory outcomes in both METEC and the private sector at large?

To answer these questions, this chapter breaks open alternative explanations for outcomes in learning by bring in a political economy analysis to a subject that has otherwise been dominated by narratives of rent-seeking, corruption and good governance. That dominant narrative has neglected the importance understanding the outcomes from other perspectives, including the analysis of reciprocal control mechanisms (RCMs) and the extent to which they have be used to frame the relationship between the state and capitalist classes to shape and influence learning outcomes.

The conceptual framework adopted in this study suggests that for there to have been robust learning both within METEC and those firms with which it had contractual relationships, there

needed to be a governance framework that effectively governs the management of rents. More importantly, that governance framework would need to combine the two dimensions of reciprocal control mechanisms as discussed in chapter 2. In this specific case, the first dimension involves the interaction between METEC itself and the government and the extent to which METEC itself was putting in effort to learn and build its technological capabilities. The second dimension has to do with METEC's relationship with the private sector and developing RCMs in an attempt to compel sub-contracting and supplier firms to learn how to efficiently organize production processes, all in an attempt to develop a supplier base. Traditionally, both dimensions involve a reciprocal relationship in the interaction between the firms; where a great deal of learning-by-doing, technological upgrading, innovation and capability building takes place, and government agencies or institutions; where the policy learning is supposed to happen as officials iteratively implement and monitor the progress of learning in firms.

Section 6.2 begins by formulating an understanding of how METEC has been incorporated into the elite bargain and into the workings of Ethiopian industrial policy. No isolated or dominant set of factors can satisfactorily explain the state's relationship with METEC, but what was observed was that the initial governance framework that had worked for a while in engaging and disciplining METEC dwindled over time. Beyond this point there was no alternative means of streamlining, supporting and controlling METEC developed by the government beyond the arms-length relationship that would persist for the rest of the decade after METEC's establishment. It was discovered that METEC's management was afforded exceptional autonomy, freedom and insulation by the state to run its operations and implement with minimal interference and political contestation from state bureaucrats and politicians. This, however, gave rise to an unintended political economy situation of a closure in the important channels of accountability and blockages in the applicability of the reciprocity principle.

There is some evidence of monitoring on an ad-hoc and piecemeal basis in relation to METEC and the state. The problem, however, is that the scope and demands of the task required for there to be a dedicated government agency or inter-agency coordination responsible for monitoring performance, and where possible to institute disciplining measures in cases of underperformance, across both METEC and its sub-contractors. The little monitoring that was carried out was either performed by an agency or arm of government that did not possess the jurisdiction or

disciplining power to institute remedial action. Further, we see just how attempts at disciplining the corporation was met with resistance by the managers due to perverse incentives created by the well-meaning, but exceptional autonomy afforded them.

Section 6.3 focuses on the contractual and operational relationship between METEC and its sub-contractors. The study found that METEC was, for the most part, left to its own devices in the expectation to look after the development and enforcement of RCMs. What is revealed is, how without the requisite administrative, project management and coordination capabilities, METEC was faced with complex and multiplied tasks of playing the role of being an agent of indigenous technological capability development and an incubator that draws domestic private capital into complex manufacturing while simultaneously developing it, all the while having to focus on its own production of goods destined for consumer and civilian markets as well as the mega-projects. Overall, the progression of learning was constrained by an adversarial relationship between METEC and the private sector, which is undergirded by a lack of mutual trust between the two. That relationship is juxtaposed against evidence from the steel sub-sector, which shows signs of a productive relationship emerging between the state and steel producers. Section 6.4 is a synthesis of the chapter.

6.2 The State and METEC: An arms-length relationship

6.2.1 A short-lived dividend from the person-depended governance relationship between Zenawi and METEC

Meles' is known to have raised the moral bar in demanding a high standard of ethics in leadership (De Waal, 2018). A key problem, however, is that while he was aware of the "constant temptation of rent-seeking" (De Waal, 2018:3), especially from the Ethiopian private sector and those in political office, he did perhaps underestimate the possibility of his most trusted allies in the military to descend into negative and growth-reducing rent-seeking, satisficing behaviour and complacency. To understand this blind spot one has to take a step back and understand the deep fissures that materialized in Ethiopian politics and political settlement throughout the decade leading up to the formation of METEC in 2010. Not only did these fractures lead to the near demise of Zenawi's leadership, but would go on to redefine Zenawi's close relationship with the military. This had been the very same military that was pivotal in the

defeat of the Derg in the late 1980s. In fact, many of the senior and mid-level military leaders come primarily from the TPLF roots of liberation struggle against the Derg military regime. Many of the remaining ones, however, are a smaller and trusted remnant in the aftermath of the Ethiopia-Eritrea war of the late 1990s. Some of his closest allies in the military's top leadership and within the TPLF had openly expressed their loss of confidence in him, more especially concerning how he had dealt with Eritrea's cessation from Ethiopia (interview reference: AEP-PEE-2). He was further pushed into a corner of vulnerability due to internal party squabbles that led to a split of the TPLF in 2001, which he survived by the skin of his teeth (de Waal, 2018).

To calm his nervousness of any future instability, Meles Zenawi dealt with those deemed to be disloyal, both senior officials in both the party and the military, through a purge that would lead him to centralize power far greater at the top and consolidate an even stronger relationship with his remaining trusted allies in the military. What necessitated the accommodation of the military even more in the political and elite bargain was the great measure of securitization that the Ethiopian State was moving towards, especially in the watershed moment of the post-2005 elections where the political climate would remain hostile for much of the time to follow. For another political economy researcher and expert (interview reference: AEP-PER-1) the shrinking of the political space that came afterwards was the government's way of dealing decisively with its political enemies. More specifically authoritarian tactics were deployed as the only way that the government could quash the dissenting views or political deliberations by the state, which in turn would be vital for justifying the military's involvement in the crucial parts of the economy amongst other things. It is through such authoritarian tactics that the government could pronounce any criticism of METEC by the Ethiopian media as essentially "off limits" (Extractive industries transparency initiative, 2019). According to Weis (2016:300-301) from the very moment that METEC was established

> "(T)hese critiques were largely restricted to private conversation or foreign opposition media: when METEC's establishment became known, there was very little public outcry. This was symptomatic of a general change in public discourse about the economic agenda of the EPRDF. Before 2005, when the instruments of the 'developmental state' were still in their inception phase, there had been a very vocal condemnation of the state-led model of development in certain

> quarters. A few years later, when the state's role in the economy had been expanded, new public enterprises established and the endowment firms been given major public contracts, critical voices had become much more quiet. The reconsolidation of political power by the EPRDF thus facilitated the forging of a closer economic nexus between state, party, and now the military.

The cannibalization of open, public and democratic debate and the direct de-legitimization of narratives or discourse that sought to question METEC and its practices or other key decision makers is consistent with Woldegebrael's (2018) account of how the Federal Government of Ethiopia similarly sought to prevent any questions or criticisms of the government's practices in relation to mega projects such as GIBE III or the GERD. However, senior management at METEC and senior leaders of the TPLF (interview reference: METEC-I2; METEC-I13; PO-TPLF) seemed to suggest that the authoritarian tactics were less about concealing ulterior corrupt motives or the advancement of a rent-seeking agenda's as some believe, but had more to do with employing METEC as an instrument of the Ethiopian developmental state and bringing in the military – an entity which would have otherwise not been perceived as the supposed driver of Ethiopia's industrialization under the capitalist transition – to drive the industrialization project without any resistance from civil society, opposition and the public.

Resistance to the installation and ascendance of METEC at the frontier of Ethiopian industrialization was occasionally met with resistance. However, such resistances was not merely enough to counter the recognition and approval in key parts of the party of Meles Zenawi's rare combination of embedding himself in the military's networks and, thus his ability to push back against any instrumental manipulation of political elites, bureaucrats and SOE managers. In a nut shell, Meles Zenawi had built a rapport with the military officials at the helm of METEC that could allow him to enforce credible compulsions on them. METEC's leadership understood quite clearly that they were under a tight leash to channel the resources at their disposal towards learning and technological capability building (interview reference: PO-TPLF).

In fact, the little available evidence of METEC's operations points to some level of progress, transparency, accountability and adherence to proper governance in the first two to three years subsequent to METEC's establishment. It signaled seriousness on the part of the government about installing proper governance systems. During this time some financial reporting on revenues as well as audits by the Auditor General were made public and bidding on procurement

contracts was open competitive and successful bidders were publicly announced. In the 2011/2012 year, METEC reported revenues of nearly $1 billion and announced a profit of 181 million birr after having recorded a loss of more than 381 million birr in its first year of operation (Tekleberhan, 2013). METEC's performance dwarfed all other companies in the metals and engineering sector, including the largest and most impressive private firm, the TPLF-owned Mesfin Industrial Engineering (MIE), which reported roughly $35 million in profits in that same year.

It is not too long after the death of Meles Zenawi in 2012, however, that it would become apparent that he was the only person who had the ability to hold METEC's leadership accountable; especially in the context of the exceptionalism it had been afforded. A political economy expert and researcher (interview reference: AEP-PEER-2) pointed out how Zenawi had purposefully and strategically elevated METEC, relative to other SOEs, to a dominant institution with the ability to influence policy-making across major areas of state intervention, but at the same time institutionally embedding it in the Office of the Prime Minister. His death ushered in, as will be discussed in the sections that follow below, the perverted use of the bureaucratic power and autonomy that was at cross purposes with his intentions when he set up METEC to be a highly autonomous institution in propelling the industrialization project. The political economy expert and researcher (interview reference: AEP-PER-2) claims that if "today you speak about METEC as a venture that began with a noble purpose, almost no one would believe you".

His sudden death had a decisive impact on turning the governance tide to bring broader upheaval in Ethiopian society and the governing party started losing focus on important priorities. More generally, the influence of the TPLF in the coalition began dwindle (van Veen, 2016). The internal cohesion of the TPLF which for many years revolved around what Vaughan and Tronvoll (2003:56) described as a "tradition of TPLF strategic thinking which sees the strength of the movement as intrinsically bound up with the socio-economic advancement it can (be seen to) offer its constituents" was dealt a heavy blow. The emergence of several factions within the party resulted in a less unified TPLF that began losing its grip in key aspects of what once mattered to it the most. The party's obsession with developmentalism and legacy of Meles Zenawi's strategic thinking around the allocation and management of rents in a developmental manner was most at stake (interview reference: PO-TPLF; Vaughan and Tronvoll, 2003; van

Veen, 2016). This intruded on Ethiopia's most important projects such as the construction of the GERD, which had been going well. According to the International Crisis Group (2019) "the late premier had dominated all branches of government. His passing ushered in a power struggle that distracted policymakers from the single-minded focus he had maintained upon the dam's construction".

Unwittingly, it would be this 'strategic' domination and central control over METEC that would expose Meles Zenawi's failure to groom a cohort of leadership in the party that was cable of disciplining them for a time when he was no longer around to do so (interview reference: interview reference: PO-TPLF; AEP-PER-2). The idea of an anti-bureaucracy bias in the Ethiopian developmental state, as Gebresenbet and Kamski (2020) have, for example, agued is perhaps excessive because a number of examples where the Ethiopian state has shown high levels of capacity, notably in the Ethiopian Investment Commission, Industrial Parks Development Corporation, Development Bank of Ethiopia, and in relation to the priorities of industrial policy.

Rather, what appears to have happened with METEC, in particular, is a creation of a deliberate and purposeful person-dependent relationship, which was at the time justifiable on the basis of the need to maintain a delicate balance between internal and external politics that threatened the very existence of key projects such as the GERD, whose planning and execution had to proceed with absolute caution and in a statutory manner within his inner circle because of these very threats (interview reference: PO-TPLF; International Crisis Group, 2019). The exclusion of other key stakeholders, policymakers, industrialists, experts, and bureaucrats, who perhaps, would have mattered a great deal in the future concerning project planning, policy formulation and governance of METEC, would soon become an Achilles heel that worked against the potential vibrancy of the SOE. It is through this institutional bypass that the capability building of a strong bureaucracy and state apparatus that would have the ability to govern METEC and its learning did not quite develop in the Ethiopian case.

It is, however, at the point of Meles Zenawi's death that there should have been agile attempts made by the new regime to find alternative means of streamlining, supporting and controlling METEC beyond the arms-length relationship that existed up to that point. The direct reporting line between METEC's leadership and the Prime Minister would no longer make much sense

going forward due to the critical juncture that now changed the elite bargain and made greater space for rent-seeking. The vacuum left by Meles Zenawi would soon have a profound impact on the state's ability compel METEC to learn and discipline the corporation whenever the need arose. At this point, the historical institutional link that was meant to drive METEC, namely the direct and interpersonal link between METEC and the Prime Minister's office was suddenly eroded. This marked the beginning of METEC's alienation to Ethiopia's broader industrial policy framework.

The new Prime Minister, Hailemariam Desalegn, did not possess the requisite influence and coalition with the military that his predecessor had. Prime Minister Hailemariam Desalegn's term of office represents a lost opportunity that could have been the beginning of a reconfiguration of the governance relationship concerning METEC. It is understood, however, that METEC's leadership would have somewhat resisted, if not totally rejected, significant governance changes because they had already been conditioned to having a great deal of bureaucratic and administrative autonomy from the previous regime. Prime Minister Hailemariam Desalegn was already viewed as inherently weak due to him originating from the Southern Nations, Nationalities and People's Region (SNNPR), which is itself seen as the weakest of the four main regions in Ethiopia. His appointment to the position of Prime Minister was a political settlement compromise in attempts to curb the growing ethnic and political tensions between the people of Tigray and Oromia (Lavers, 2019).

Unlike Prime Minister Meles Zenawi, he did not share the important characteristics with the military generals, such as ethnic ties and brotherhood shared in the rebel force; which cannot be underestimated in Ethiopia's governance relations. He was therefore, from the beginning, estranged from the military and, therefore, had a fuzzy and fragmented relationship with those at the helm of METEC almost throughout his entire term. All of these new leadership developments pointed to one thing: the tacit assumption that the Office of the Prime Minister could still control METEC should have been investigated and revisited for reconfiguration (interview reference: AEP-PEE-2).

6.2.2 Exceptional autonomy with respect to self-monitoring

The selection of METEC's management from military ranks was, in part, done on the basis of the political economy understanding that they are a proxy of the TPLF/EPRDF and, therefore taken to significantly represent the interests of the party. Surprisingly, however, the privileges afforded to them, especially relating to managerial autonomy, when the corporation was set up are of an unprecedented scale in recent Ethiopian developmental state history. In practical terms the corporations' managers had access to an exceptional kind of administrative, financial and bureaucratic autonomy which is normally the reserve of senior members of the Ethiopian state's bureaucracy.

This formulation drew a lot of criticism right from the beginning from those who opposed the expanded role of the military in the SOE. The justification from the party-state was that the developmental state objective of centralisation of control over rents and their use right at the top in the EPRDF party state would be covered by the Prime Minister's focal monopoly over METEC while at the same time acting as a buffer to insulate the SOE from the frequent intrusions of political and bureaucratic interferences and allowing them a greater degree of flexibility in decisions concerning the choice of technologies. In fact, advice contained in a report by the Korea International Development Institute (2013) to the Ethiopian government on matters concerning METEC, POSCO is cited as an example of a conglomerate that owes much of its success to the partial and sometimes complete isolation from various political interferences for the fulfillment of its mission and METEC is encouraged to take this direction.

As it turns out, the safeguarding of the independence and creativity of state-run entities is not entirely a foreign practice in Ethiopia, but in fact has elements of continuity that are visible in the previous military regime's handling of its production. A historical glance into the Derg regime's SOE operations reveals that mangers of firms such as the then Kality Metals firm, a government-owned firm producing metals and engineering goods, previously enjoyed a similar status of autonomy as adopted in METEC. Kality's relative success is attributed to the exceptional quantity of autonomy and independence it was afforded (Ethiopian Society of Mechanical Engineers, 2010). The noticeable difference, however, between Kality Metals and METEC is that the former faced quite heavy-handed restrictions under the monitoring and supervision of the National Metal Works Corporation, but no such institutional supervision is available towards METEC. The former also had quite a smaller support package and its operations were on a much

smaller and controllable scale as compared to the vastly complex environment of far bigger stakeholdership in which METEC has been operating under, and would intuitively require a far more advanced level of coordination than what is currently being exercised.

In the specific case of METEC, the absence of this delicate balance has led to its management going undetected for a long time in its engagement in growth-reducing activities such as getting involved in extractive industries which have no bearing on their bottom line, such as coal mining; transacting beyond the scope of what is reasonably needed as immediate inputs or operations, such as the purchase of cargo vessels and for maritime trade and planes for exclusive travel; uncontrolled access to finances; firing haphazardly those whom were suspiciously viewed as 'neoliberal others' vilification of experienced engineers called out for insubordination when they questioned certain aspects of a project; use of violence and militaristic force on locals; the imposition of prices that were sometimes above the market-related price (interview reference: AEP-PEE-1; Fong, 2015).[14]

The majority of METEC's Board of Directors, the CEO and about 80% of the managerial team is largely seconded from the military (Weis, 2016). As a result, the relationship between these constituents is particularly cosy and has had the effect of encouraging imprudence when it comes to the overall governance of the institution. It has also resulted in an undermining of the complex process of defining and monitoring the corporation's overall activities, which include the Board's role in exercising oversight over management's operations, approval of plans and budgets, as well as monitoring the implementation of the corporation's projects in accordance with the approved plan and budget. Along with the requirement of presenting quarterly reports to parliament, including financial details and project status information, the Board's role extends to the submission of monthly reports to the Ministry of Public enterprises and to make recommendations on remedial actions or sanctions that it deems necessary to be to be taken against underperforming managers (Hailu, 2018).

Once monthly reports have been to the Ministry of Public Enterprises, it is up to the latter to make its own evaluations on the mega-projects. In reality however, the Ministry of Public Enterprises largely does not have the mechanisms for contract management and merely holds

[14] See Woldegebrael (2018) for reference to 'neoliberal othering' practices in the Ethiopian state

tokenistic powers vis-à-vis METEC due to it not having a direct mandate to take disciplinary measures against it. Despite some noble attempts made to hold METEC to accountability, it does seem that the managers were skillfully able to join hands with members of the Board, creating both a veil of concealment and an alliance of resistance against any attempts at disciplining them. The Ethiopian Ministry of Industry, which houses a Metals and Engineering Sector directorate and seems like a likely candidate to play the role of monitoring METEC's performance and make the necessary recommendations for the government to discipline non-performance, gathers very little information on METEC, and therefore has little knowledge of the corporation's operations or its contractual and operational relationships with other firms (interview reference: GB-MOI-1).

6.2.3 METEC's resistance to modern management techniques

METEC's current corporate governance model is rooted in the Ethiopian military's leadership style, which itself emanates from the Guerilla structures in the war against the Derg regime led by the TPLF. It heavily influences the organizational culture and appears a deviation from Anglo-Saxon models of management. The desire to sublimate the military organizational culture and governance-type and align it with business practices whose decorum closely mimics the Anglo-Saxon model in order to reflect better accountability and transparency was expressed strongly by the Manager of Ethiopian Power Industry (interview reference: METEC-I9. He cited the problematic nature of the current management approach in how it has not only emboldened impatience for protocol and authority, and instead to carry out much of their work in the most unorthodox fashion, but has encouraged a lackadaisical and unproductive environment at the level of the factory floor.

According to one political economy expert (interview reference: AEP-PER-2) while commonly cited as being extraordinarily disciplined, the leadership's professionalism is far below that of similar armies that are engaged in more successful military business such as in China, Pakistan or even in neighbouring Egypt. In fact, even by Ethiopian standards, the level of professionalism in the current army is below average when compared, for instance, to that of the Derg regime army, which was trained during the time of Haile Selassie's rule and went to universities and military training centres abroad. According to an Executive Board Member of the Ethiopian

Society of Mechanical Engineers (ESME) and former Chair of the EBMEA (interview reference: PS-ESME-1) METEC, therefore, exhibits serious challenges relating to a failure to unlearn and move past some of the core rigidities that make it incredibly hard for management to adapt and conform to more modern management approaches and techniques. The ESME Executive Board Member (interview reference: PS-ESME-1) suggested that aalthough uniquely rooted in a different history and complex institutional setting than most other Ethiopian SOEs, METEC's opportunity to adopt modern management practices, which are amongst the critical success of the national state-owned carrier, Ethiopian Airlines (Oqubay and Tesfachew, 2019) is not entirely unimaginable.

METEC's peculiar organizational culture that is emboldened by the autonomy afforded to it has, in effect, incentivized arrogance among senior management who, as a result, cannot take advice from the government, experts, senior engineers and private sector interest groups (interview reference: METEC-I9). The leadership's inability to take advice from engineers within the corporation or from experienced engineers in credible private sector associations such the Ethiopian Society of Mechanical Engineers discourages learning. The ESME Executive Board Member (interview reference: PS-ESME-1) detailed an example of METEC management's resistance to advice with a demonstration of how it came to be that there is so little cross-fertilization of learning across METEC's subsidiaries, when in principle the opportunities abound.

In the early days METEC and ESME clashed over what the ESME Executive Board Member (interview reference: PS-ESME-1) believes to be a short-sighted decision taken by METEC planners to establish the different factories as autonomous subsidiaries. ESME Engineers had proposed a big centralised plant with melting, casting, forging, fabrication and other specialised capabilities established under one roof as the flagship subsidiary for prototype development, components and spare parts design, and specialised manufacturing. This approach would have allowed all the other subsidiaries to serve as points for body manufacturing or assembly while allowing for the organization of design and production aspects to be far more streamlined, efficient and encourage the cross-fertilization of learning across the different areas of

specialisation. To the detriment of efficiency, METEC's management defied ESME's approach and opted for greater autonomy in all major features, including design and production.

One manager (interview reference: DPSF) of a leading industrial plant in Mekelle believes that it would have been possible to equip METEC with sufficient managerial capabilities, for instance, by involving prominent figures such as Arkebe Oqubay at advent of METEC due to the experience they had previously gathered during the 1990s managing manufacturing and production operations in experienced firms[15]. The particular usefulness in having a revolving door for managerial elites lies in the possibility of bringing in people with familiarity and experience in the industry. A sufficient rotation between different roles as captains of industry, bureaucrats and technocrats makes industry development even more prolific (Whitfield, Therkildsen, Buur, and Kjaer, 2015).

Such a configuration has the potential for creating an 'embeddedness' that could lead to the transfer of experience as well as technical and practical knowledge of the key productivity constraints that faces an industry; something that would have been key in the case of METEC had experienced engineers and managers from different sections of the Ethiopian manufacturing and engineering profession been pooled together with military capabilities. The move to appoint Azeb Mesfin, the former CEO of the EFFORT business group that has a big profile in the metals and engineering industry via Mesfin Industrial Engineering, who was also a long-time Executive Committee member in the TPLF and widow of Meles Zenawi, to the Board of METEC in 2018 somewhat reflects the wish to have well experienced business people and technocrats who are able to translate the needs of the sector into effective industrial policy through mediating the political objectives of the government and the economic needs of the sector (interview reference: METEC-I12).

6.2.4 METEC and the state: learning affinities or alliances of growth-reducing rent-seeking?

EPRDF politicians and other technocrats or high-raking bureaucrats within various parastatals and governance structures across the Ethiopia government do not necessarily have a shared

[15] Oqubay was, for instance, at the helm of the leading metals and engineering company in Ethiopia, Mesfin Industrial Engineering (MIE) as the Director General for a number of years in the 1990s.

consensus when it comes to their relationship with METEC. There have been serious contestations that run on a continuum of three categories: the hardliners who are committed to the original strategy; those who have begrudgingly accepted the 'live and let live conditions'; and those who are diametrically opposed to the material practices of METEC.

First, for top officials in the TPLF, the lens through which METEC must be viewed is as though the corporation were the patriarch of Ethiopia's technological capability building. From this perspective, the corporation operates far beyond the category of a traditional profit-making producer of civilian goods and equipment for the country's mega-projects. During an interview, a senior official of the TPLF (interview reference: PO-TPLF) revealed that there was an internalized logic of learning-by-doing and the understanding of the necessity of loss-financing as well as the sympathy for applying a longer time horizon for learning is alive and visible in TPLF's approach to influencing policy. According to the TPLF Senior Official (interview reference: PO-TPLF), this appreciation, which other factions in the EPRDF do not strongly possess, has generally been the guiding motivation whenever the TPLF seemed to be publicly accommodating the so-called failures of METEC.

The narrative advanced by the TPLF, in defence of some of inefficiencies in METEC's projects, is that some Ethiopians have failed to put their budgetary concerns and strict adherence to timelines in a proper context, which then undermines the developmental state goals of learning and affording proper time and space for technological capability building. The Chairman of the TPLF, Debretsion Gebremichael, who has also served as the Deputy Prime Minister responsible for economic coordination and as Chairman of the EEP's Board of Directors is one of those who have been staunchly committed to working with METEC. For the Director and Researcher at the Meles Zenawi Foundation (interview reference: MF-MZF-1) such a commitment represents an attempt to ward off what the TPLF sees as concerted efforts by some factions in the EPRDF to see through the ascendancy of neoliberalism and distract or even derail the vision of the developmental state. Debretsion Gebremichael, in interviews with (Champion and Manek, 2019) is cited mentioning how the delays in the construction of the GERD, which have now seemingly caught others by surprise, were always a factor from the very beginning, because of the understanding that domestic capacity was being used, and therefore significant gaps in domestic expertise would need to be filled along the way.

This somewhat corroborates with what Koenig (2018), a prominent Geopolitical Economist in East Africa, found, where "according to several insider accounts, there were never any complaints about project delays". When it comes to Prime Minister Hailemariam Desalegn's position, it does appear that despite his arms-length relationship with METEC's leadership he did remain committed to openly and publicly supporting METEC. On one occasion, at the Meles Zenawi Symposium on the 'African Democratic Developmental State' on the 21 August 2015 in Kigali Rwanda, Prime Minister Hailemariam Desalegn's reconciles his views, using the example of METEC, with Meles Zenawi's conviction and conceptualization of Development (de Waal, 2018) that development is a process of accumulating technological capabilities, and the fact that building the capacity to do so takes time.

The second category consists of those technocrats and bureaucrats who linger uncomfortably somewhere in the middle ground between endorsement and a gradual loss of confidence in METEC. While they had accepted the 'live and let live' conditions, their patience for the many arising problems was under gradual erosion and so the original strategy involving the use of the military faced the threat of replacement by an alternative vision for how the government should proceed with Ethiopia's industrial and mega-projects. One such key figure in this category, who on a number of occasions did find himself mired in a complicated relationships with METEC, is the trusted, respected and generally considered to be exceptionally competent late former Chief Engineer of the GERD, Semegnew Bekele. As an official who held the power of approving and awarding long-term and ad-hoc contracts to METEC and its sub-contractors in relation to certain aspects of the dam, Bekele seems to have been treading on a knife-edge with both a disdain for METEC lackluster leadership as well as what seems to others to have been a puzzling over-commitment to the original strategy laid down by Meles Zenawi (interview reference: METEC-I3; PO-TPLF).

On the opposite end of the spectrum and in the third category are those who have, both in private and in public, voiced out their concerns over the many faults that were becoming more and more evident in the projects. This includes some of those who had been formerly aligned with the Zenawi strategy, but whose tolerance limits for any justification for continued financing or accommodation of delays, detours and the adoption of exceptional procedures had lost attractiveness and METEC's leadership consequently completely fell out of favour with them.

As a result, they themselves became victims of what Woldegebrael (2018) calls 'neoliberal othering' by both the government and METEC and some faced dismissal from their positions over disagreements they had with METEC and the government. One such person is Kifle Horo, who had formerly shared the job of Chief Engineer with Semegnew Bekele at the commencement of the GERD in 2011. Within METEC itself, it has been a common occurrence for those in both senior and lower management structures who, for instance, questioned some of the managerial and financial procedures, to be ousted in key decisions or face outright expulsion from the corporation (interview reference: METEC-I3; PO-TPLF).

METEC's leadership seems to have been good at forging alliances with its sympathizers in first and second category, but brutally sidelined dissidents. According to a senior official from the Ministry of Industry, METEC is a prime example of an SOE that operates under all the right conditions for the propulsion of learning, but its leadership sometimes skilfully manipulated the alliances it had to engage in bad rent-seeking, further their own interests and escape accountability. In his view, had METEC remained focused on using its privileges to accelerate learning it would have made substantial progress.

Arguably the state's governance relationship with METEC mimics, at the micro level, the exceptionalism described by Woldegebrael (2018) in relation to the project governance of the Gibe III dam project. Woldegebrael (2018) describes a governance practice that frequently by-passed the norms in terms of decision-making processes; a violation of standard procedures; and an escape from accountability. The 'securitization of development', as Woldegebrael (2018) calls it, around the GERD project, for instance, is what made it possible and justifiable for the government to legitimise the extra-conventional and extra-constitutional procedures that were to follow throughout METEC's operations. In many areas METEC unilaterally coordinates various aspects of the projects and convenes a network of multiple stakeholders; including in most cases cherry-picking of subcontractors for major procurement deals.

As a result, the corporation's leadership holds significant power in brokering relations and engagement outside of the usual modalities of governance and accountability processes that other SOE's have to comply with. Although "METEC is legally a state enterprise that should be governed by public enterprises proclamation no 25/1992" (Gebregziabher, 2019:266), in practice it falls outside the purview of usual SOE governance. This has, in turn created an opportunity of

the corporation to slide into negative and growth reducing rent-seeking; mostly using its tacit and unofficial privileges and powers to outmanoeuvre other institutional stakeholders in matters relating to administration, finances and governance as well as to shield itself from being subjected to the excesses of accountability.

An instructive example of how the corporation finagled its way into rentierism is in how the managers could, for instance, manipulate their links with the Ministry of Defence. The corporation did so by sometimes declaring its functions as confidential or of classified nature whose information, production and organisation needed to be handled with the highest regard for national security. In other instances, claims of being producers of civilian goods for important and urgent mega-projects as well as subsidised consumer goods were used to deploy policy privileges in their favour whenever the managers found it suitable to do so. It is through this "double face of METEC" that rent-seeking managed to rear its ugly head. Their being seconded from and paid through the armed forces also allowed METEC senior managers to escape accountability in relation to discrepancies concerning civilian matters. Further, transactions that concern the procurement of supplies for goods and services linked to national defence, is for instance, one of the areas that are, by way of article 3(2)(a) are excluded from ordinary public procurement protocols (Negarit Gezata, 2009). METEC's management could sometimes hide behind these exemptions and other obscurities to engage in harmful rent-seeking practices. It is, especially, from within the corporation's financial operations divisions such procurement, logistics and supply and business development that the tendency for corruption emerged.

In interviews carried out by Weis (2016:300), METEC was characterized as the "creation of a state within the state". This characterization somewhat corresponds to what an interview participant in this study described as unbridled administrative and bureaucratic powers in the absence of a public governance body with a sufficiently corresponding amount of power to keep METEC in check. Not even the Federal Parliament seems to possess any "real" power to hold METEC's management to accountability let alone implement or recommend punitive measures to be taken against METEC's management (Tassema, 2018). While various committees of Parliament have, from time to time, conducted sporadic visits to project sides to inspect progress, they were not agile and empowered enough to enforce disciplinary measures over evidences of slow progress or any other quality issues.

With oversight powers heavily concentrated in the Office of the Prime Minister, which by virtue of having an incumbent who lacks legitimacy with the military elites, the authority of parliament over METEC largely appears to be tokenistic resulting in the lack of political muscle to discipline the corporation's leadership. While the Ethiopian Industrial Development Plan (2013:60) recognizes that "the industrial development process needs critical monitoring and evaluation of the performances of the first three to four years with respect to the selected national projects and makes review of plan for the next years", nowhere else in the state's governance structures or ministries is there any evidence of serious debate or commitment to monitor METEC's progress of implementation and internal governance.

6.3 METEC and the Private Sector: A Deficit of Trust

Concerning METEC's obligations to the domestic private sector, the corporation's main role has primarily been that of a mid-wife that draws already-existing, but not sufficiently competitive domestic private capital into complex manufacturing activities as well as to serve an embryotic incubator of small and medium enterprise along the metals and engineering value chain. The important levers through which this is supposed to happen is through procurement (sometimes having strong elements of preferential procurement) and joint-investment activities with the private sector, skills development and training, and assisting private sector firms with proto-type development. While some progress has been registered in that regard, METEC lacks broader project management capabilities and very specific competencies for undertaking the magnitude of the task of developing the private sector.

These include: the ability to forge a productive relationship based on mutual trust between the SOE and the private sector; having a strategic acumen in beneficiary selection; crafting a rents-management framework that favours the emergence of a productive class over rentier-type classes; and a level of embeddedness in the government's bureaucratic structures to be able to actively influence the design and implementation of policies, incentives and measures that facilitate the mushrooming of technological capabilities in the private sector. It is worth spending more time looking at the evidence the shortcomings in relation to some of these functions and in contrast with the steel sub-sector and its direct relationship with ministries and agencies in the state. The relationship between the state and investors in the steel sub-sector appear to be much more productive and have, thus, yielded better outcomes in the advancement the sub-sector.

6.3.1 Incohesive relations between METEC and the private sector

Interviews with firms (interview reference: DPSF) mostly revealed that the hindrance to the development of a productive and vibrant relationship between METEC and the private sector was mainly due to a trust deficit between the two. The stage for the mutual suspicion had been set even prior to METEC's establishment with a rift between the general Ethiopian business and the government having already been firmly established more especially after 2005. At the time of METEC's establishment, the tensions still loomed large. To begin with, the Manager of the Ethiopian Basic Metals and Engineering Association pointed out that the relationship between the military-run SOE and the private sector took off on a rocky footing with the private sector harboring deep suspicions and skepticism of the government's intention, despite METEC's public relations exercises and invitations to the private sector (interview reference: IA-EABMEI-1).

When METEC was first established and consolidated from a number of the firms and assets spread across different military and civilian entities that were mostly held by the Ethiopian Privatization Agency, the tacit understanding was that the corporation would not be a permanent state producer, but would serve briefly in combination as a demonstration project and a temporary place holder until the private sector showed sufficient quantities and qualities of dynamism. The conversation about privatization, which was supposed to be initiated as an ongoing after METEC's establishment, did not seem to be forthcoming in the following years (interview reference: IA-EABMEI-1).

This created fears among many in the private sector and civil society that the success of METEC in its technological and commercial endeavors would lead it to gravitate towards a permanent SOE with no eventual intention of opening the space for potential private sector entrants. In addition, the corporation's material practices, more specifically in relation to beneficiary selection, were not convincing enough to demonstrate to the private sector that METEC was indeed in the business of crowding it in, in a fair, equitable and transparent manner. In addition, the rapid expansion and diversification of METEC's manufacturing operations to commercial and industrial goods that were seemingly at the periphery of METEC's traditional and originally

planned business interests did not inspire confidence to an already anxious private sector (interview reference: PA-EEA-1; IA-EABMEI-1).

METEC's diversification and expansion strategy has already been described in chapter four as displaying haphazardness in some cases, even as it relates to METEC's core business. More specifically, the Ethiopian private sector generally believes that METEC had no business extending itself to activities whose production could subsequently be fulfilled by the former. METEC's expansion into sectors such as textiles or plastics has been often cited as prime examples of the government's bulldozing characteristic of amassing almost every development sector while undermining local and private enterprises (interview reference: DPSF; IA-EABMEI-1). The legitimacy of the corporation has often been damaged by this expansionary behavior, which appears to the private sector as nothing but greed. It has also been argued that such behavior blocks the pathway to a more inclusionary state whose ideal function would be to open up some of these activities to domestic investors. Doing so would have potentially allowed METEC to free up its scarce capacity and resources for the mega-projects, for instance, or made more space for the corporation to making improvements as it moved to the frontier of indigenous technology capability development in more complex areas in which the private sector has no capacity or capabilities (interview reference: AEP-PEE-1).

Thus, the antagonism between the two represents a failure; not only on the part of the state in getting the buy-in of the private domestic capital, but also on the part of the private sector to see METEC in light of its overall developmental role than as the problematic and classic leviathan and monopoly producer. On the one hand, METEC's management is seen as having had a warped understanding of their role and, for the most part, held onto the attitude and assumption that they did not need the help of other industry players. In taking the "yichala" spirit seriously, which is loosely translated into an "everything is possible with us" attitude, they overestimated their capacity and, thus, ran against the originally intended mission of inculcating the development of indigenous technological development (interview reference: IA-EABMEI-1). On the other hand, the Manager of METEC's R&D Centre (METEC-I4) squares the blame on the private sector for not being on the same wavelength as METEC in terms of their commitments to the development of technological capabilities. According to the him, the synergies between the them and the private sector were only going to be possible if local companies had taken serious

initiative in building their own human and technical capacity at a far more acceptable and faster pace that was parallel to the government's efforts.

METEC has, on a number of occasions, reportedly extended the invite to different firms to submit concept proposals for projects, but these either turned out not to be technologically feasible or commercially viable. However, even when some private sector firms did manage to come up with creative innovative and viable business and project plans for joint ventures, the lack of trust between the them and METEC caused the latter to dismiss or delay the projects on the basis that the designs and technologies that METEC was working with were either patented, licensed or of sensitive national security nature and the private sector could not be trusted to protect certain information or act in good faith (Interview reference: DPSF; IA-EABMEI-1). As a result, when joint projects were undertaken, they amounted to half-hearted partnerships. A major shortcoming on the part of METEC is that for a long time it operated without a unified framework for dealing with project proposals and this has created further barriers for the establishment of a productive relationship. The Manager of the EBMEIA (interview reference: IA-EABMEI-1) criticised METEC for this, saying that "there is no central project office, for example, with designated project officers for the various and specific projects. Everything is disintegrated. Industrialists do not know with whom they are going to communicate with or acquire information from. We need working drawings and designs as manufacturers in order to work with them, but we do not know where to go to. This creates a barrier to a meaningful working relationship because of lack of systems".

The experience of the private sector with METEC does, however, vary, especially across the different subsidiaries. Hibret Machine and Machine Building Industry (HMMBI) and Ethiopian Power Industry (EPI) have both tended to do relatively better in their engagement with the private sector than most of the other subsidiaries. While other subsidiaries had the opportunity to learn from them, the fragmentation of METEC, in terms of its organizational structure has been a major obstacle for internal learning on how to relate with the private sector in a growth-enhancing manner. The organizational structure of the SOE has the façade of a more-or-less coherent group-level management with shared corporate divisions such as corporate planning, public relations and communications, marketing, corporate finance, internal auditing, human resource development management and partnerships and international relations. On a practical

level, however, the governance framework does not appear to be unified and centralized across the whole METEC business group. This means that any opportunities for the cross fertilization of learning that ideally need happen across the different departmental or subsidiary-level structures is limited (interview reference: GB-MIDI-1; METEC-I9; METEC-I12).

6.3.2 METEC as regulator of reciprocal control mechanisms

A range of METEC's practices have served to fan the flames of what are can be seen as already-existing negative narratives regarding the state and its role in stifling competition at the expense of the private sector's overall growth, while apparently protecting METEC's unwarranted privileges. Such practices include, for example, the monopolization over the supply of certain products and goods that are destined for government projects. Such monopolization prohibits direct sales of, for instance electric meters to the Ethiopian Power Corporation (EPC) and has reportedly pushed private sector manufacturers and suppliers into a corner of frustration (World Bank, 2013). In accordance with its husbandry role, it only seemed logical and sensible for METEC to make more room for domestic private sector to begin supplementing its own production in areas where the latter had shown an interest and appetite for learning and where METEC was under pressure to meet the demands of the market.

More broadly, this has taken place quite clearly in the production of transformers, electric cables and electric meters. METEC is evidently working with a number of private sector firms to improve their supplier capability. According to the Manager of Ethiopia Power Industry (interview reference: METEC-I9) they have been working with a number of domestic firms such as BMET, Elsewedy Cables Ethiopia and Belayab that act as sub-contractors that manufacture products based on Ethiopia Power Industry's detailed technology specifications (drawings and designs) as both an outsourcing and technology transfer strategy. Production is supervised through the onsite presence of EPI's senior engineers and quality specialists. The products are then subsequently tested and approved in EPI factories according to the adopted industry certification standards. While METEC has, to some degree, been involved in assisting some of these domestic manufactures develop their capabilities, some have now surpassed METEC with respect to quality. As value chain links between the two becomes stronger, there is, however, a mutual benefit that appears to be emerging in favour of METEC since the improved capabilities

of the private sector are, in turn, challenging METEC's EPI to improve its own quality and competitiveness (interviews, DPSF).

Certification standards have proven to be one the important elements, so much so that METEC has in-built them into its bidding processes as a minimum safeguard against poor performance. More specifically, and in relation to beneficiary selection of construction and civil engineering firms, METEC has coordinated efforts with the Ministry of Construction and the Construction Machinery Industry Development and Regulation Bureau. The Bureau is responsible for undertaking an assessment and competency certification of construction machinery firms and keeps an up to date database of contractors and their certification status, which is based on a points system. Not only do firms need to be pre-certified to do business with METEC ensuring that the most suitable firms are selected in the bidding process, but they can apply for first time addition, renewal or an upgrade status in accordance with certain competence criteria. Rarely, however, do firms undergo downgrading due to, for example, poor or declining performance. Once firms are locked into a particular grade, they continue with being recognized and given contracts, despite sometimes evidences of satisficing and diminishing performance or non-improvements in learning (interview reference: GB-IC-1; GB-MIDI-1).

For firms that are appointed as technology partners or suppliers, METEC's management "sets a target for private engineering companies to manufacture and deliver spare parts of those products for METEC by upgrading their technology" (JICA, 2015).[16] In some of METEC's subsidiaries engineers are commissioned to spend time at the manufacturing sites of their sub-contractors monitoring production and helping them upgrade their technologies. However, as the JICA (2015) found that what is not clear is whether these targets are met or how failure to meet them is disciplined. This aligns with our findings. Two prominent examples of strong disciplinary measures were, however, identified where the firms had to face take-over or closure due to poor performance. The one is a project run by Alem Fitsum Gebre Silassie where the company's management did not run the project appropriately. For this firm the project itself and the loan that was granted were transferred to METEC. The second firm is M2K Engineering PLC, which was taken over by the DBE and auctioned in March 2017. Overall, however, the corporation's proclivity to mediate and govern learning in the private sector in which it supports or sub-

[16] Chapter 5 page 3

contracts aspects of production to is far limited. As METEC became increasingly involved in successively complex projects, it became overwhelmingly difficult for it to sustain cohesive relations with the private sector without the requisite capacity and organizational capabilities.

6.3.3 The steel sub-sector as a cite of close cooperation between producers and the state

Apart from it being an important feeder into METEC's various uses and activities, the steel sub-sector in Ethiopia owes much of its growth to linkages to the various mega-projects; government's infrastructure projects as well as the boom in housing and real estate construction. As a prime input into the manufacturing industry, the government has taken a supportive stance and recognized the importance of the development of a strong and competitive domestic steel industry in order for a take-off of the manufacturing sector as a whole as well as the creation of an industrial base. As such, the ability of the state to provide and manage productive rents to the sub-sector is crucial in both the promotion of domestic players as well as protecting them against cheaper imports.

Although the steel sub-sector remains dominated by foreign investors from mostly China and Turkey, it has a few important local players who have emerged to contribute to its tremendous growth and dynamism over the years. Currently, the local steel manufacturers include East Steel, Abyssinia steel PLC, C&E Brothers Steel Factory (established in 2008 by Ethiopian Investors), Sino, Steely RMI (founded in 2004 and wholly-owned by Ethiopians) and Toussa steel mill (a joint venture between the Ethiopian company MIDROC and an Italian investor) have a combined production capacity of more than 3 million metric tons of rebar steel per annum. Most of the basic metal products currently produced in Ethiopia are so-called downstream products, in particular easiest products technologically (JICA, 2010). However, pioneer firms such as Yesu PLC (established in 2000 by Ethiopian investors) have been upscaling production in products such as cold rolling sheets, galvanizing and steel pipe products, which require higher technologies (Sutton and Kellow, 2010).

Most of the firms in the subs-sector are associated with the Ethiopian Association of Basic Metals and Engineering Industries (EABMEI) which was established in the year 2007. Gebreeyesus (2014) argues that the EABMEI is ineffective due to it being initiated by the government rather than by the private sector itself. On the contrary, the EABMEI has played an

instrumental role in representing its members, in the steel sub-sector especially, and protecting their interests and fighting against the rent-seeking and harmful behavioural practices of steel importers acting in alliance with retailers through its visible involvement in industrial policy dialogues and mobilization of the private sector. Acting in unison with the Metals Industry Development Institute (MIDI), the Ethiopian Basic Metals and Engineering Association (EBMEA), has been pivotal in pushing the government to carve out a clear strategy to boost the competitiveness and further development of the domestic steel manufacturing industry. Their concerted efforts in putting pressure on various government stakeholders such as the Office of the Prime Minister, the National Export Coordination Committee, the Ministry of Industry, the Ethiopian Investment Commission and the National Conformity Assessment Enterprise culminated in a decision by the Ethiopian Ministry of Finance and Economic Cooperation (MoFEC) to protect domestic manufacturers through a set of policy tools that encourage the substitution of steel imports with locally manufactured steel. In 2014 the MoFEC instituted an increase in the tariff on steel imports from 5% to 20%. In 2016 a MoFEC directive that made a call on all government agencies and governmental projects to begin procuring steel reinforcement bars exclusively from local steel manufactures was institutes. In addition, the Ministry of Industry through a October 2016 circular endorsed a decision that had been made by the National Export Coordination Committee (NECC) 123rd meeting where steel traders and importers, through a total ban of duty-free privileges for the import of reinforcement bars and wire rods, were stripped of any privileges they had. The Ethiopian Investment Commission also issued its own circular reinforcing the ban of the duty free privileges of importers (interview reference: GB-MIDI-3; GB-MIDI-3; Manufacturing Consult, 2017).

Overall, the directives were issued after the government had been made aware that the combined production and supply of steel from local manufactures was sufficient enough to meet domestic demand and their quality was acceptable. To his satisfaction, a manager at a local steel mill mentioned the local companies had successfully managed to convince the government to test local capacity and quality by procuring reinforcement bars from them, and subsequent to this the local producers were able to demonstrate quality and capacity for almost any private and public sector project. It is also through the nudging mechanisms of the Ethiopian Conformity Assessment Enterprise (ECAE) such as monitoring by sending experts on surprise product evaluation visits to steel manufacturers and providing certification on quality products, tools,

technologies and other international standards that steel producers have been compelled to improve their quality to levels that are on par with imported steel.

To also encourage domestic steel manufacturing, the City's Public Procurement and Property Disposal Agency (PPPDA) which is in charge of the construction of 20932 middle income public housing scheme made the procurement bidding process more competitive. The Federal Public Procurement and Property Disposal Service (PPPDS) and the Addis Ababa Saving Houses Development Enterprise also issue out similar tenders (Fortune, 2017). Suppliers have to provide a certificate from the Ethiopian Conformity Assessment Enterprise to ensure that their products conform with/meet the required standards, also compete on price. Illustrating the force market pressures as an additional disciplining mechanism at play, the General Manager at one of the largest Steel mills, Steely RMI, was cited in Manufacturing Consult (2017:14, 15) "we are running a multi-billion birr business. When you are engaged in this kind of business, quality is alpha and omega. We have set up both physical and chemical laboratories within our factory to ensure out products have the best quality".

I visited a steel mill where the General Manager of a local steel mill illustrated how the quality of their reinforcement bars had shown significant improvement to superior quality and strength from the time when they began operations. The company had built a solid reputation so much so that its products were becoming more acceptable to foreign contractors who are often skeptical of the quality of locally manufactured steel. Indeed, infrastructural projects that are backed by concessional loans, most especially from China, remain a challenge for the government's efforts to promote the domestic steel industry. According to a MoFEC official (interview reference: GB-MFEC-1) the practices of EPCM (Engineering, Construction, Procurement and Management) firms, consultancies or turnkey suppliers who coordinate the entry of metals, machinery and engineering inputs into Ethiopia, with no preference given to Ethiopian suppliers, even for the simplest inputs still remains a challenge. At present, Ethiopian suppliers or engineering services providers are largely cut out from the EPCM firms' procurement strategy due to claims of suboptimal quality, lack of standards, high input costs, and delays in delivery time. The relationship between foreign contractors and the state has also been made particularly tricky by the fact that foreign contractors are most financially backed by their home-country governments with loans that are sometimes conditional on the use of suppliers or services in the countries. In

fact, the Ethiopian state has not been able to fully exercise discipline in cases of non-performance, delays or incompetence. One clear example of discipline, however, was when the state confiscated the performance bond and equipment of two Indian companies that had been appointed by the Sugar Corporation to conduct an overhaul of the Metehara Sugar Factory and the Tendaho Factory, but failed to complete the project within reasonable timeframe and cost (Kumar, 2017).

The government's interventions coupled with the large scale government housing and infrastructure programmes and private sector construction proved to be beneficial, thus leading to a boom in local rebar and wire rod manufacturing. What emerged as a consequence, however, was a flooding of the market and surplus production. An unexpected turn of events occurred towards the end of 2017 and at the beginning of 2018 when a shortage ensued. The shortage coincided with a devaluation of the Ethiopian Birr by 15% which was aimed at dealing with the problem of a chronic forex crunch, putting upward pressure on steel prices. These developments can, in part, be explained by the hostility of steel importers and traders, in reaction to the self-assertion of domestic steel manufacturers and their gradual success in influencing economic policy. Steel importers, traders and retailers have displayed a tendency to resist developments that move in any direction that poses a threat to their businesses. These groups acted in coordinated efforts in an 'unholy alliance' to protect their rents by restricting local manufacturers from gaining more access to the local market and hoarding steel, thus creating artificial shortages and raising prices. To the advantage of domestic manufacturers, the government endorsed them as a manufacturing class that identifies itself with the general developmental aspirations of society and to see the importers and retailers as engaging in rent-seeking and harmful behavioral practices (Manufacturing Consult, 2017). As a consequence the authorities took stringent measures against reinforcement bar retailers by persecuting anti-competitive behavior and shutting down their operations in extreme cases.

Despite some wins for the domestic steel manufacturers, who have so far shown an appearance of a productive capitalist class with an ability to make a set of progressive demands, there have, however, been policy measures that appear contradictory to the goal of promoting domestic manufacturing. This is exemplified by a 2018 directive, No/REL/05/2002, issued by the National Bank of Ethiopia, which replaced the 2016 directive on currency allocation, precluding domestic

manufacturers from preferential access to foreign exchange currency. Steel manufacturers have also had to bear the burden of devaluation by reducing their prices. Manager of the Ethiopian Basic Metals and Engineering Industry Association (interview reference: IA-EABMEI-1) argued the decision to prioritize export sectors over import-substitution sectors in the allocation of foreign currency served to erode inter-linkage between sectors. Furthermore, the manufactures see one of the other decisions of the NBE, which privileges foreign companies in getting access to loans and supplier's credit for the purpose of importing inputs on credit, as a direct contradiction to government policy and its stated commitments to the domestic sector.

Domestic steel manufactures have had to find coping mechanisms to deal with the foreign currency shortages that frequently pose serious raw material challenges to the steel sub-sector. In most SSA countries scrap metals have managed to find their way out due to attractive export prices (Wolf and Cheng, 2018). In Ethiopia, however, the triumph of steel processing interests noticeably began in 2006 with legislation that put a ban on the export of scrap metals as a result of raw material shortages faced by local manufacturers of long steel products (Sutton and Kellow, 2010). The lack of raw materials for the production of steel was obviated by the timely arrival on the scene by the creativity of capitalist that turned to scrap metals in attempts to produce steel locally at competitive prices. The government established a steel scrap disposable program via the Ministry of Defense where firms like Abyssinia Integrated Steel have been able to acquire their main input (steel scrap) at low prices (Sutton and Kellow, 2010). To centralize the collection and sale of scrap metal, METEC, the Public Procurement and Property Disposal Service (PPPDS), and MIDI have been developing new rules stipulating that public entities have to sell their metal scraps via the Public Procurement and Property Disposal Service (PPPDS), which operates under the Ministry of Finance and Economic Development (MoFED). In addition, widespread consultation with the private sector, both suppliers and buyers of scrap metals, culminated into a MoFED circular in 2014 which, among other targets, sets the prices on the qualities and quantities of scrap metals that are benchmarked against local and international prices, and selects the buyers of metal scraps on the Ethiopian market (Deubzer, Gizaw, Herbeck, and Fikreyesus, 2015).

The traders in the Ethiopian steel sub-sector can be likened to a parasitic class, due to its outlook not necessarily being focused on production, but on speculative activities and short-term

profiteering. Through their links with importers they have maintained some control of the domestic value chain and continue to put in a lot of effort in lobbying the government to protect their interests. Their behaviour is somewhat a vindication of the Ethiopian government which is often accused of unfairly side-lining some sections of the private sector as rent-seekers with a short-term perspective that is narrowly focused on consumption and sales, and not capital and technological accumulation. Steel producers on the other hand have earned the trust and fulfilled one of the conditions that Whitfield et al. (2015) argue is necessary for industrial policy to be successful and sustained, namely, a domestic industrialist class that is pushing the government to defend its productive interests and push the government in the direction of a mutual productive relationship. Reaching the point of mutual trust between the government and steel producers has not been a simple affair and demonstrates the complexity of how such relations need to be built through a dialectical process, as was the case, for instance, in South Korea (Chibber, 2002). Ultimately, Ethiopia's steel sector demonstrates a state that is willing to partner with domestic capital to strengthen the domestic industry and at the same time a frustration of the rent-seeking behavior and interests of importers and traders.

6.4 Synthesis

Today, METEC faces a crisis of legitimacy, which mainly emanates from the belief that its leadership, who appear to have acted with impunity, has done nothing but engage in growth-reducing rent-seeking practices. After all, many believe that this was the intention from the beginning. What this Chapter has presented is a more subtle picture of a big mismatch between what had been Zenawi's intention, who is the architect of the Ethiopian developmental state, in what was originally aimed to be a grand industrial policy vision in a sector that holds the key for the achievement of the Growth and Transformation and what has in actuality unfolded. To fulfill its mandate Zenawi designed METEC to operate in isolation from intergovernmental scrutiny as well as insulate it from excessive democratic controls and debate.

The evidence suggests that the bad outcomes of corruption, wasteful expenditure, misallocation of resources and growth-reducing rent-seeking, however, have far less to do with premediated state capture in a corporation is managed by inherently rent-seeking military officials supposedly aligned with the TPLF for a well-orchestrated looting agenda. Largely, however, they are emergent properties in the absence of strong governance mechanisms that centered on

institutions of industrial policy as echoed by the experience of developmental states in late industrializing countries. The discussion intertwined an analysis of the institutional architecture and reporting lines through which the learning was meant to be mediated with an understanding of how the key actors in each of the involved institutions interacted with each other. The key findings in this suggest that neither one of the two RCMs, concerning METEC and the private sector, were implemented in a sufficiently developmental manner. Overall the discussion illustrates how ensuring that rents promote learning requires RCMs that are well-designed and applied, which is more than just a capacity problem, as suggested by Gebresenbet and Fana (2020), but are about navigating the complex dynamics of business-state relationships.

It would still come as surprise, though, how a state with the understanding of the importance of strong bureaucratic state machinery with an embedded autonomy or not easily captured by the interests of capitalists that are, especially, not aligned to the agenda of the state (Evans, 1995; Chibber 2003; Wade 2010) would not invest in the construction of such a strong bureaucracy for both managing and running METEC and its projects as well as for disciplining METEC, but instead leave the nation's most important projects to the whims of military elites. When Meles Zenawi was still alive, he, in a sense, represented the proxy for METEC's governance focal point Meisel (2004) describes as a "sole and uncontested, or monopolistic, focal point at the heart of the formation of economic and social compromises, and thus was able to subordinate the majority of private (individual) interests to the national interest, and buy their corporation at minimal cost".

At the time of his sudden death, however, no state apparatus had been established yet to take care of the shift that needed to take place from the person-dependent governance focal monopoly around Meles Zenawi to a more institutional-dependent mode of governance. METEC's operation would from then largely take place outside the realm of control of the people or institutions that controlled government or governed industrial policy to keep the corporation on course for learning. After Meles Zenawi's demise, there were, in effect, no in-built feedback mechanisms to detect and signal the mounting problems within and facing the corporation due to a lack of transparency, deterrence to audits, and the sheer arrogance by the corporation's management.

The lack of feedback mechanisms had the further consequence of closing any avenues for innovative and creative solutions to emerge within reasonable time bounds. Not even institutions of the ruling coalition, such parliament, whose legitimacy is particularly linked to the promise of adequate delivery on growth, development, and the necessity of the government to demonstrate its capability in the timeous completion of mega-projects to the benefit of all, could act as a focal governance monopoly point due to not having mechanisms to discipline METEC. Furthermore, the autonomy and set of privileges afforded to the corporation emboldened its leadership to go beyond engaging in learning-by-doing, but also exploit several of the governance loopholes to further some of their own interests. The exceptionalism afforded to METEC is in many ways 'unorthodox' and gave the corporation a special type of status outside the traditional domain of SOE governance. The unorthodox forms of organizational or corporate governance, which seemed to have worked fine in European postwar and East Asian developmental states setting due to strong reciprocal control mechanism, seems not to have incentivized the rapid propulsion of learning due to weaknesses in the RCM.

To be sure, however, METEC's leadership did not always engage in unproductive rent-seeking and corruption. In fact, they did direct some effort towards building in-firm technological capabilities during this time, but these did not always translate into technological or commercial success due to weaknesses in the marketing strategy, bad technological selection, and a general lack of credible mechanisms to monitor performance measures relating to both in-firm learning and the speed and quality of the mega-projects. To a certain extent METEC did also try to forge a productive relationship in its interactions with the private sector, but this constrained by the deep seated mistrust from both ends, which has worked to prevent the emergence of fully productive relations. This antagonism is, however, not entirely new but existed between the state and the private sector even before METEC came into the scene. The relationship did morph into relationships that were sometimes fuzzy or tending towards cooperation with certain players, but even so was not confined into a coherent rents-management framework.

Chapter 7

Ethiopia as an African developmental state?

As formulated, the definition of the 'developmental state' runs the risk of being tautological, since evidence that the state is developmental is often drawn deductively from the performance of the economy. This produces a definition of a state as developmental if the economy is developing, and equates economic success to state strength, while measuring the latter by the presumed outcomes of its policies. It has led to myopic concentration of analysis around success to the neglect of the 'trial and error' nature of policymaking in the most successful cases. If a developmental state is not to be deified into some kind of omnipotent and omniscient leviathan that always gets what it wants, then the definition must include situations in which exogenous structural dynamic and unforeseen factors can torpedo genuine developmental commitments and efforts by the state, as happened recently in some of the most successful Asian developmental states.

…recognition of episodes and possibilities of failure leads us to a definition of a developmental state as one whose ideological underpinnings are developmental and one that seriously attempts to deploy its administrative and political resources to the task of economic development. Proxies such as 'tax efforts' and public expenditure patterns can be used to measure such 'seriousness' (Mkandawire, 2001: 290-291).

7.1 Introduction

In the preceding empirical chapters, I have endeavoured to show the role and position of METEC as an instrument of the developmental state in Ethiopia's industrialization and the extent to which the corporation has made progress in propping up the Ethiopian private sector in the metals and engineering sector as a development partner. What was discovered, more especially in chapter four, is that some important advances in learning have actually been made in taking

forward technological capabilities rooted in earlier industrial plants, stimulation of a domestic capitalist class via sub-contracting opportunities and in the development of critical engineering and management skills around mega-projects. This would not have happened without state investment and industrial policy. However, this learning has not been without failures in relation to technological selection, incubating entry-level entrepreneurs, mobilization of key ministries and agencies around a common learning effort, and spearheading learning at a pace that was fast enough to keep up with fast expanding diversification and the growing demands of various projects within a reasonable amount of time and cost.

Chapter five revealed how METEC's architecture has been framed and articulated around the securitization of development that necessarily affords METEC with major political influence and an autonomous structure. This articulation has not only unwittingly resulted in tensions within the state, but has paved the way for difficulties with respect to the implementation of reciprocity. The state has found itself unable to monitor the corporation's performance, enforce compulsions to learn, and exert discipline over non-performance. The fractured relations that exist between the METEC and the private sector were also identified and how this has constrained the procession of learning. There is a trust deficit between the two that acts as a deterrent to the formation of deep and transformative relationships between METEC and its private sector partners. It comes, in part, from the differences in culture as well as METEC's perceptions of the private sector as ultimately profit-driven and motivated by the need to strike lucrative deals with the state as opposed to an interest in the difficult process of learning. The limitations are also related to METEC's difficulty to withdraw from particular activities beyond a certain point of acting as a launch pad for the private sector and allow it to thrive.

This chapter ties together the key findings of the study by reflecting on the broader and ambitious question of the possibility of the Ethiopian developmental state that this thesis set out to answer. What is argued is that even failures and the contradictions of Ethiopian industrial policy do not negate the possibility that Ethiopia is edging closer to becoming a developmental state.

Section 7.2 critically engages with the real and perceived failures of METEC and rejects the unequivocal espousal of METEC as a dismal failure. Instead the shortcomings are located within the context of learning-by-doing by putting into sharp focus the challenges generally faced by low-income African countries as they attempt to transcend technical complexities and develop adaptive capacities to reverse mistakes with agility. The discussion brings Albert Hirschman to bear by emphasizing that what matters the most for the Ethiopian state is not getting everything right the first time around. Ultimately, the learning that has occurred so far should not be totally eclipsed by the unintended outcomes and failures or be the cause for total despair, lest the risk of the learning petering out altogether.

It is argued that the shortcomings should, instead, be viewed as part of an initial episode of experimentation from which the inadequacies and shortcomings in learning can be observed and subsequent adjustments to the policy framework can be made to learn better. The momentum of learning, however imperfect it has been, needs to be sustained by the view that the current challenges faced by domestic capital and the policy challenges in the state are merely an obstacle course on the way to more successful policymaking and outcomes. My perspective fits with Oqubay's (2015) view that industrial policy outcomes in Ethiopia need to be thought of in broader terms than the simplistic and frail binary evaluative framework of success or failure. Indeed, as Oqubay (2015:279) argues, "the failures of the 'developmental state', far from indicating its uselessness, should be viewed…as part and parcel of the real-world process of accelerating structural change development". If anything, the METEC experiment confirms the challenge of learning in least developed country contexts; that the greater the technical complexities, the more difficult learning will be.

The analysis under Section 7.3 moves to debunk the dominant view that prevails in the existing literature that associates Ethiopia's industrial policy for the metals and engineering sector with the logic of neopatrimonialism. It is argued, instead, that the weak outcomes in learning are linked with weaknesses in reciprocal control mechanisms rather than primarily being a function of neopatrimonialism. This is demonstrated through a comparison between METEC and the TPLF's other business interests where the party-state's degree of central control and discipline over rents for learning has been divergent even under the same political setting. More specifically, the kind of political influence that METEC's managerial elites have wielded has

allowed them to block the compulsions of learning at both the formal level of institutional arrangements in the government and at the level of formal and informal political arrangements. On the other hand, a party-owned enterprise like EFFORT has less been able to block the compulsions and disciplines from the party. The different ways in which firms are embedded within institutional and political arrangements in the state calls for more specifically targeted incentives and compulsions to drive the processes of technological capability building and as also suggested by (Khan, Mengistu, Assefa, 2016).

Section 7.4 deals more directly with the features of the Ethiopian developmental state as they have emerged in this study. The analysis serves to enrich and, to a certain extent, correct what has otherwise been an incredibly narrow line of understanding of what has in fact been intended by the Ethiopian state to be a deep process of transformation.[17] The state's involvement, via METEC, in some of the country's most important mega-projects and production of various consumer and industrial goods, should be seen in light of three main and important motivating factors. They include: the mitigation of internal and external political risks; the state's desire to centralize learning rents to the military as part of the project of building a developmental state from above and; the twin objective of state-led technological acquisition and incubation of domestic capitalists under the umbrella of the state.

It is argued that through the tough developmental decisions that have been taken, the Ethiopian state has, unlike most other African governments, has fundamentally claimed the right to learn and exercised the right to fail in an era that is defined by a generally shallow conception of development. This boldness of the state and the evidences of learning, both firm-level learning and policy-level, are accolades that can in fact be interpreted as an indication that the Ethiopian developmental state is consolidating. Paradoxically, however, it is the same over-optimism that has driven the Ethiopian state to attempt an ambitious industrial policy that would be overkill. Nonetheless, lessons have been learnt.

[17] Caveat: many other perspectives that prioritize a political line of analysis for the motivations behind the architecture of METEC are found in the existing literature and are not rendered completely irrelevant by the analysis carried out here.

The novelty and endogeneity of the Ethiopian state's development process is, thus, ultimately shown to be in direct contrast with the otherwise perfect, cautious and codified processes that have come to represent the quest of policymaking in most African countries that rely on blueprints and expert policy advice to be found outside the state. The state did not wait for the moment where it could first be characterized as all-knowing, all-seeing and endowed with a pre-requisite set of characteristics that would qualify it for the task of embarking on ambitious industrial policies. Rather, it embarked on the journey of development through learning-by-doing and with the recognition that learning is itself fraught with risks. It rested on the principle of making development decisions independently and on the basis of trial and error experimentation.

Finally and before concluding, section 7.5 examines the extent to which the adopted developmental state framework might be eroding under Prime Minister Abiy Ahmed and the reforms currently being instituted by his regime. In doing so, I am careful not to pass any definitive judgement on Ethiopia's future as that is beyond the scope of this thesis. It is also not my primary goal to analyse the latest turn in Ethiopian politics. For, that would have the effect of displacing the central question that this thesis is primarily concerned with. Nonetheless, a fair understanding of the tectonic shifts in the political economy is important for a proper contextualization of the place of domestic capital in Ethiopia's future endeavours of technological capability acquisition and mega-project development. The military's political and ethnic legitimacy as the crucial partner to Ethiopian industrial development is at present under challenge from certain factions of the polity and society at large who do not perceive the military as the supposed legitimate beneficiaries of Ethiopian industrial policy. At the same time, signs of a deeper political challenge to Ethiopian the Ethiopian developmental state are bubbling under.

The jury is still out on whether the circumscribed role of METEC in Ethiopia's mega-projects and more broadly industrialization will displace the previous regime's attempt at developing a national capital base whose interests are aligned with the developmental agenda of the state. However, both economic theory (within the heterodox tradition) and history suggest that a premature abandonment of a major state-owned conglomerate such as METEC would not only snuff life out of an aspirant yet embryonic indigenous capitalist and managerial class in an important infant industry, but that it would also pull the rug from Ethiopian policymakers without putting to test their ability of instituting institutional agility via new policy responses to

the immense challenges faced by both the corporation and the metals and engineering industry at large.

7.2 Locating METEC's perceived 'failures' within the context of learning-by-doing

At face value, it may appear reasonable to judge the progress of METEC based on the following determinants: the on-time delivery of industrial goods and mega-projects; within budget and no cost-overruns; limited risk exposure; efficiency in resource allocation; within the agreed design specifications and quality parameters and; smooth-running managerial and technical operations during the construction of the various projects. Indeed, all of these technical aspects are of crucial importance in the conventional literature for assessing the success or failure of factory operations and mega-projects. It is perhaps, therefore, reasonable that others (Abebe, 2018; Gebregziabher, 2019; Gebresenbet and Kamski, 2019) have unequivocally espoused METEC as failure on the basis of the corporation not delivering and meeting its targets on these metrics. Gebregziabher (2019:274), for instance, excessively declared METEC and its involvement in Ethiopian industrialization to be series of "colossal failures".

However, an exclusive focus on these outcomes of delays and cost-overruns naturally leads to the conclusion that there has been no learning whatsoever and, thus, dismisses the scope for any better policy responses that would allow the corporation to transition to a new phase of 'failing better' or better yet, succeeding. In other words, to only see failure because projects have not been completed would be an exercise in nihilism that causes one to negate or even reject that there has been any learning, thus condemning the corporation to its early grave. Yet, we now know, because of the evidence shown in this thesis that there has been substantial progress in terms of technological capability building, even in the presence of seemingly overwhelming failures. While there has not been complete delivery on certain aspects of the ambitious exercise and some of METEC's products proved to be commercial failures or never quite achieved acceptable quality and price levels, these evidences of weaknesses do not necessarily nullify the learning that has actually taken place. On some levels the corporation has been able to adjust and address some of the weaknesses and somewhat deliver.

Unlike the existing literature, which almost exclusively interprets the progress and outcomes of the corporation from a mainstream viewpoint, a more useful analysis can otherwise emerge from

an interrogation of the challenges associated with learning. In this way, we can, therefore, reveal that the inability of METEC to fully deliver on its mandate is rooted in the somewhat inter-connected elements of the corporation's immature level of experience and the impossibility of the task at hand. The data collected suggests that, although manufacturing experience existed, there were huge gaps in some areas and, therefore, an unfitness to take on certain tasks and projects. So, to a large extent it could be argued that the corporation was set up for failure by the project planners. In an ideal mainstream world, where industrial interventions need to be tailored to capacity, the prolonged amount of time it takes to assimilate to new technology and difficulties in transferring both explicit and tacit knowledge should have been a deterrent against the ambitious involvement of inexperienced domestic firms. From this perspective, much of the problems could have been avoided had the project planners exercised their foresight into the complexities that lay ahead as well as the steepness of the learning curve and thus, avoided being lured into impossible ventures (UNDP, 2017). The question then is, why, despite the lack of experience and unfitness of the corporation, Ethiopian policymakers opted for a learning-by-doing approach to Ethiopia's industrial projects?

The explanation can, in part, be found in Hirschman's (1967) notion of the hiding hand and its associated over-optimism. The hiding, itself informed by the developmental attitude of Ethiopian state actors, guided Ethiopian project planners to imagine that the then existing capabilities and manufacturing experience could be successfully propelled much easily and further ahead of the complexities that lay ahead. The choosing of domestic capital to lead Ethiopian projects is effectively an enactment of both elements of the Hirschmanian hiding hand. Hirschman describes the first element as the 'pseudo-imitation technique' where project planners are lured into the belief that projects are not as difficulty-ridden as they appear to be, thus leading them to the idea that the application of those projects would be straightforward to their context as much as they have been somewhere else. Under the second element, the 'pseudo comprehensive program' those carrying out state projects are likely to be lured into complex projects under the illusion that they are in possession of far more insight into the project's difficulties than is as yet available.

An important qualification must, however, be noted. It is not that METEC was in entirely not up to the task. The corporation was somewhat regarded as reliable, firmly developmental,

increasingly competent, and trusted corporation for the enhanced implementation capacity for Ethiopia's development strategies (van Veen, 2016; Korea International Development Institute, 2013). For instance, an early observation made by the Japanese research and academic think-tanks, JICA and the GRIPS Development Forum (JICA and GRIPS Development Forum, 2016:71), found METEC to be one of "the most technically competent firms in Ethiopia", and together with a party-owned companies such as Mesfin Industrial Engineering (MIE), have the basic technology and willingness to learn. Likewise, and earlier on in 2014, the Korea Development Institute (2014:85) took the opinion that "METEC is the most critical player for leading Ethiopian efforts at capacity building for greater performance by increasing the exposure of the domestic industry to international best practices, advanced management skills and the adoption of technical reforms".[18] What was hidden to METEC, however, were technical complexities the corporation would only be acquainted with over the course of time, but come short in addressing them with sufficient agility and adaptability.

7.2.1 Challenges to learning in the face of technical and systems complexity

A major element by which METEC's performance can be realistically assessed has to do with the enormity of the mega-project in terms of size, the technological complexity involved, and what Hirschman calls the complexity of the "systems-quality" of the project with respect to coordinating and fitting a number of components into a whole. In this regard, each of the mega-projects of concern have many interdependent parts that had to be fitted together in terms of production within the METEC subsidiaries as well as fitting together the components of other subcontractors and adjusting all of these to each other in order for everything to work well. Hirschman (1967:41) (quoting Henry C Heart, 1961) brings to our attention the systems-quality complexity of dam construction in general, and especially when local inputs are involved:

[18] An assessment of this nature by these agencies can be deemed to be trustworthy for two reasons. First, at a broader level they have first-hand experience in facilitating industrial development in Ethiopia's metals and engineering sector after having implemented a number of kaizen programmes and conducting a number of policy dialogues between themselves and the Ethiopian government. Second, these agencies have, to differing degrees, conducted in-depth firm-level analysis of METEC and are trusted by the Ethiopian government with respect to industrial policy advice.

> *Dam building is, like commanding a military offensive, an exercise in fitting parts into a whole. It is much less predictable than it sounds. The parts have to be assembled – reinforcing steel, girders, sluice gates, even stone and above all earth – are not, as you would supposed, uniform and standard. The means by which the assembly is done – the shovels, the dumpers, compressors, air hoses, hoists, mixing plants, and especially the men and women have their own vagaries. The dam building engineer has to be able at once to readjust the combination, to improvise a substitute for the failure, to get the process going again.*

Arguably, due to the main challenges for schedule control of GERD (being) the size of the related works and its remote location, which are not unique in the water infrastructure industry, but their combination making the challenges particularly acute at GERD (Ferraro, Bezzi, Rossini and Mastrofini (2015:2), one could argued that the GERD fits Hirschman's (1967) description of systems complexity. These dam experts have also pronounced the GERD as a "daring" challenge by virtue of the lead contractor's, Salini Impregilio, adoption of the "fast-track implementation" method and approach. The fast track implementation approach basically develops all core components and phases of the dam, including investigations, studies, design and construction, all concurrently. METEC, a learning firm, with a responsibility of the electromechanical and steelworks – almost 50% of the project – was forced to calibrate its pace of manufacturing and fitting these elements in line with the "fast track approach".

One could argue that the allegedly suicidal death of the GERD's Chief Engineer in 2018, Semegnew Bekele, tragically symbolizes the complexity of the systems-quality of a project like GERD and the political and managerial tensions that regularly arise from setbacks, failure and the breakdown of relations between key decision-making actors on a project of this magnitude (Champion and Manek, 2019). Even prior to the coming together of the physical components, the GERD was riddled with many setbacks, including curtailed attempts at mobilizing finances for its construction. According to the Minister of Communications and Information in an interview with the Reporter (2017):

> *"We have seen how political pressure could be challenging for such projects while constructing Gibe III. A number of foreign governments and NGOs have actively campaigned against this project and to some extent they have succeeded in curtailing foreign financing for the project. We know of some who wanted to support us, but were forced to abandon their plan due to intense diplomatic pressure. Finally, the government had to change its strategy to complete Gibe III. This*

has caused a two-year delay. So, we decided that the GERD should not be vulnerable to foreign pressure and influence".

With respect to the sugar projects, the systems-quality has been described by the Ethiopian Sugar Corporation (ESC) as far more cumbersome than any other mega-project in Ethiopia that was being constructed at the same time due to a number of factors. These factors include the disadvantage of the factories being located in areas that are devoid of infrastructure and the burden of building the various access infrastructures prior to the actual construction of the factories. Furthermore, the complexities have included shortcomings in institutional capacity; limited technological readiness; gaps in domestic capacity in terms of skills and technological know-how and; gaps in infrastructure and weak agriculture-industry linkages (UNDP, 2017), which have all contributed to the delays. The ESC (2016) described the systems complexity in the following words:

> "The other factor that makes the sector the most huge one is that it calls for building dams and/or diversion weirs; constructing long-distance stretched big, medium as well as small canals; land levelling and cane plantation work on a very wide area of land; construction of both residential and non-residential houses in the hundreds; construction of hospitals; health stations; schools of different levels; internal roads; potable water; and many more service-giving institutions as the sector deploys thousands of personnel and their families. Hence, it is much easier to say that building a single sugar factory is like building a town".

The backwardness in infrastructure, requiring every type of initial investment in housing, water, administration, electricity, communication services, health services, and other basic services was not just unique to the sugar projects, but most mega-project sites in Ethiopia are quite far behind, resulting in loss of time and finances in setting up these initial investments. In addition, the quality of having so many components, actors, stakeholders and factors involved, itself introduces many unpredictable or unforeseen constraints, which have been beyond METEC's control in most cases. Rather than the tendency of pessimists to take a short-termist view that quickly dismisses the efforts of domestic capital as an outright failure, the position of the Ethiopian Sugar Corporation (2016) was, in the face of criticism (Kamski, 2016), to acknowledge some of the limitations of the strategy of involving domestic capital in the sugar

projects, yet at the same time recognize the centrality of learning-by-doing and learning from failure:

> "This (involving METEC and domestic private sector firms) has opened a new chapter in the nations' history of sugar development endeavor as we have been used to be just recipient of technologies where there was no technology transfer. This is a big leap as a nation though there is failure in meeting the schedule with our domestic contractor in completing construction of the sugar factories. One should not skip over that those nations now building sugar factories, including fabrication of very complicated and sophisticated machineries of the industry has more than a century of experience in the construction business of the industry. The main issue to regret over is the foreign currency we as a nation are being obliged to import sugar from abroad while by now we should have had started exporting it. And that is the lesson Sugar Corporation as well as METEC including other stakeholder should draw from the challenges they faced as well as the results they have registered…"

In the case of the fertilizer project, the Yayu Fertilizer Complex, for instance, the systems complexity is perhaps not any less complex than that of the case of the sugar projects or the GERD. For the fertilizer projects the external constraints have included: delays due to wetness of the project site caused by heavy rains that led to a natural disaster in the area; delays in the import of equipment and machinery from South Korea; delays caused by the Chemical Industries Corporation (CIC) during the compensation of coffee farmers for their evacuation from the project site, which delayed the commencement of construction by almost half a year; contractual disagreements between METEC and sub-contractors, which would in some cases halt the project by up to ten months and; community protests arising from social unrest in the region, amongst many other factors (Fortune, 2015b).

Whilst the outcomes still call into question the ability of the state and its proxy firms to execute the mega-projects more independently from foreign capital, Ethiopia is in a position of better strength than it was a decade ago with respect to domestic execution capabilities. METEC, however, underscores the complexity of learning in development projects; that decisions taken with strategic intent can very quickly run into technical difficulties. The main problem is that the pace of learning was not subsequently calibrated in a reasonably dynamic way so that it could

catch-up to the technical difficulties that would arise. The necessary learning in terms of professionalization of management; upgrading or overhauling the existing technological architecture and; making major improvements in engineering skills, market intelligence and internal supply chain management, amongst others, happened at a far too slow pace.

This was coupled with the arrogance and some misguided over-optimism within METEC about its own capabilities, which meant that management was incredibly sluggish (sometimes resisting) in the adoption of expert advice from the private sector and professional engineering bodies. Certain sections of the engineering profession had their own imaginations concerning the way in which the development of Ethiopia's machine building industry should proceed and did from time to time raise legitimate concerns about the technological, knowledge, skills and managerial challenges that METEC could potentially run into. It was, however, not easy for METEC to accept their advice due to their earlier open scepticism about METEC's suitability to lead the process of Ethiopian industrial transformation. The tensions were compounded further by the appearance of the professional bodies to have mostly favoured an approach that tailors the development of industry and mega-projects to current capacity and requiring relatively simple technologies. Some concerns were raised in the interviews about the government's strategy seeming to be too ambitious such that it outstrips the capacity of the government, the education system, coordinating institutions, as well the private sector to supply what is needed.

In relation to the domestic private sector that METEC was courting for various sub-contracting roles, METEC did, on occasion, believe that the private sector did not match their level of ambitiousness. At one point, some private sector firms were reluctant to take up sub-contracting opportunities that they had already been awarded. They had felt from the get go, that the deadlines were not realistic given the scope of work to be undertaken on the projects or the newness of the work to them. As a result, they turned down the sub-contracting opportunities based on the consideration that the mega-projects were either too big or new to Ethiopia, and what was demanded from them in terms of contract administration, human resources management, and mobilization of machinery needed wider timelines and to free up some of their tied resources if they were going to adequately execute their parts of the projects.

The counterfactual arising then is; would METEC and the government not have been much more successful had they taken the alternative route of approaching the projects in a pilot-style fashion

that allows the corporation and its sub-contractors to first gather strength, experience and know-how on a gradual basis given the level of inexperience? On the one hand, this type of approach would have potentially allowed METEC to go through the experimental and sequential exercise of starting with projects, however ambitious they are, on a small-scale in a trial and error manner before going on to undertake bigger and much more challenging projects (Amsden and Hikino, 1994). The idea that they could hit the ground running using the prior existing capabilities as though they were a corporation with many years of experience in the construction of big industrial projects has, to some extent, its own flaws. This is so because, while carrying the vision of incubating a domestic industrialist class, the corporation itself never really gave itself the time to go through a period that would allow it to investment in professionalization of the workforce and management; build strategic architecture and; take stock of the skills, market intelligence and internal supply chain management.

In a nutshell, the METEC experiment does not appear to represent an experimental and sequential exercise of the kind where it would first go through small-scale projects in a trial and error manner before undertaking bigger and much more challenging projects. On the contrary, METEC somewhat represents an infant that was prematurely thrust into the game. Even at the firm-level with respect to operations of the industrial plants, it seems odd that the corporation didn't quite have the luxury that the successful East Asian developmental states such as Taiwan or South Korea, for example, had where their corporations experienced multiple failed attempts before eventually launching projects successfully (Lee, 2019). Had the government not been under pressure to speedily implement the Growth and Transformation Plan (GTP) and given itself enough time to learn, perhaps not so many would be convinced to quickly espouse the corporation as a failure in the event of surfacing difficulties while still in its infancy.

It is clear that the state and METEC had a much more ambitious vision for learning-by-doing and urgency for leapfrogging that prioritises technological internalisation over the alternative turnkey delivery of technology. A deeper probe, however, reveals contested meanings in the understanding of leapfrogging and how METEC should carve it out. While there is a clear understanding that the corporation was going to take the more complex, yet more rewarding, route to technology acquisition and project development that prioritizes internalization over the turnkey delivery of technology, there seems to have been lack of adequate deliberation, planning

and strategy around the sequencing of technology. The question of how the pace of the learning should be calibrated to the corporation's internalization skills and absorption capabilities was also lacking. The vision was for a long time largely devoid of a precise plan of action concerning the choice of leading technology partners to help achieve this goal. Attempts to internalize technology have, therefore, blundered forward in a haphazard manner that did, sometimes, kick-start the process learning, but failed to sustain it.

As a result, many of METEC's projects got off the ground, but soon ran into implementation problems. Such progress would, however, soon be derailed due to existing and in-progress domestic project execution capabilities not keeping up with the fast-paced demands of the projects. This is clearly visible in, for instance, how the GERD's construction was on track and proceeded undisturbed for a while after the construction was commissioned but soon ran into problems (International Crisis Group, 2019). The main factors that were pointed out has having a deleterious impact on the projects as well contributing towards poor progress and performance of mega-projects include corruption, limited initial investment capabilities, systems complexity and lack of organization capabilities.[19] The glaring disparity between METEC's targets and the resultant situation in delays and cost-overruns that have been realized shows a lack of target setting capacity. Apart from the fact that the guiding details of the process were lacking, METEC's management also had limited proclivities in technological selection, which sometimes resulted in purchases of machinery that were not always a good fit for the purpose they were bought for, thus creating inefficiencies.

7.2.2 Insufficiency of adaptive capacity?

A big part of the delays, setbacks and digressions emanate from the initial miscalculations of the time and cost projections as well as the unrealistic targets placed on projects. What was initially believed to be supposedly routine, simple or undemanding turned out to be far more time-and resource-consuming. With the GERD, for instance, from quite early on, within the two and a half

[19] The differential effects of each causal factor cannot be established with the methods adopted in this study.

years since its inception, there were many changes being unilaterally guided by Ethiopia. The geopolitical challenge in which the GERD has, for instance, been embroiled in has introduced many complexities that called for redesigns, reconfiguration and adjustments of the projects specifications. One such was at the recommendation of an International Panel of Experts (2013) in a report on the GERD, which pushed for design changes to be made in order to appease complainants and to satisfy the environmental sustainability, water security, and engineering issues as well their livelihood concerns. Some of the recommendations for the design and engineering changes were quite significant, but nonetheless seem to have been adopted and subsequently implemented by the dam's Chief Engineer and project planners. Inevitably, these changes and realignment processes on engineering aspects impacted both timelines and project components in which METEC was involved in. It comes as a surprise, however, that in relation to the GERD the report by the International Panel of Experts (2013) still maintained a fairly optimistic outlook on the original projections in relation to the time it would take to complete the project despite the significant design changes.

While the use of international capital and the turnkey approach, more specifically, has often been justified as a way to avoid delays and minimize risks in most of Ethiopia's mega-projects, Oqubay (2015) found that it did not necessarily guarantee success in timely completion of cement projects in Ethiopia. In fact, investors in the Ethiopian cement business had, in the past, made use of local industrial equipment manufacturers and this resulted in the timely completion of projects and the lowering of costs, whereas the involvement of international firms and the installation of turnkey projects had, on the other hand, often resulted in significant delays (Oqubay, 2015). A look at other Ethiopian projects, such as the Chinese constructed Addis Ababa Ring Road Project, which due to incomplete and inadequate design specifications underwent 200 variations during the 6-year construction period, also suggest that substantial schedule-growth in the completion of the projects is not unfamiliar in Ethiopia (Mo, Orr and Lu, 2008).

In the sugar sector, the three expansion projects in which two Indian companies, Uttam Sucrotech Limited Ltd and Overseas Infrastructure Alliance (OIA) Ltd, were awarded the contracts saw extended periods of delays. The pre-existing Wonji/Shoa sugar factory which is

located in the Eastern Wollega Zone of Oromia State, and was expanded at a cost three billion birr to the government was delayed by more than 18 months. A second expansion project, the Fincha sugar factory, which received cost 250 million dollars, was also delayed by more than two years. The recent newly built Tendaho factory in the Afar State also suffered some serious delays with the first phase of the project only being completed in more than two years after the expected completion date (Kumar, 2015). Another example of completion delays, where international capital was contracted, includes the Gibe III hydropower dam whose completion of the electromechanical work was not finalized on time.

These many instances of delays reveal the reality that mega-projects of this magnitude and where learning firms are involved require a relatively long time horizon for their eventual completion. From this perspective, there is, therefore, nothing extraordinarily unusual about the delays or cost overruns incurred in Ethiopia's mega-projects under the guidance of METEC. Instead, they represent the complexity, poor project management experience and limitations in prior exposure to sophisticated technical requirements of mega-projects. After, all, the ubiquity of delays and cost overruns in projects such as large hydropower dams is well acknowledged in the literature (Ansar, Flyvbjerg, Budzier and Lunn, 2014) where for instance; on average, 96% of large dam projects are proven to have cost overruns and delays. Cost overruns can be so severe leading to high enough construction costs that a net positive return is not assured. Not only are large dams costly and prone to systematic and severe budget cost overruns, they also take a long time to build. Large dames on average take 8.6 years. With respect to schedule slippage, Ansar, Flyvbjerg, Budzier and Lunn (2014) made the following observations: 8 out of every 10 large dams suffered schedule overrun; actual implementation schedule was on average was 44% or 2.3 years higher than the estimate. Like cost overruns, the evidence is overwhelming that implementation schedules are systematically biased towards under estimation

While the successful application of the fast track approach in three Ethiopian projects, Gibe II (420 MW), Beles Multipurpose (460 MW), and Gibe III (1870 MW), which led to substantial reductions in total project implementation time and full control of project cost is worthy of praise, it is also worth noting that they were constructed on an entirely turnkey solution on EPC-basis by Salini Impregilio (Ferraro, Bezzi, Rossini and Mastrofini, 2015). There were, however,

no domestic firms involved as in the case of the GERD where METEC was responsible for close to about 50% of the project while at the same time needing to be 'held by the hand' during a time of learning. Broadly, the longer time involvement in the various METEC projects was exacerbated by this very inexperience and having to simultaneously under-go the process of learning.

On the other hand, while it can be said that METEC is a victim of its own doing by underestimating projections on time-to-completion and project costs in its bidding processes, the corporation's inability to formally negotiate with the state to swiftly reverse such errors or redirect course by inviting a more experienced international partner acted as a conveyor belt to deliver METEC to its own 'failure'. Yet, even so, the expectation of some sections of the media, civil society, academics and some key figures within the state, that METEC, a fledgling and inexperienced domestic firm that had just been founded, would be able to deliver on its projects without significant deviations carries the implication that they narrowly believe that the process of development is a straightforward and fast-paced process with no scope for learning and mistakes to be made.

The same can be said about the multiple initial miscalculations of project costs that would lead the corporation to keep going back to ask for more of the life-line over the years. METEC's early problems, both financial and technical, certainly show that a corporation of METEC's magnitude and scale of responsibility requires a lengthy time-horizon and huge input of financial resources for learning from the state. Economic theory and history, of developmental states in particular, show that state or military-run companies of the METEC kind, which generally embark on massive industrial projects in which the country has no static or dynamic comparative advantage in, are likely to impose heavy costs on the economy. The implication of this observation is that aspirant developmental states in developing countries need to be flexible and generous with financing periods of loss-making while technological capability building and domestic capital formation is in progress.

Ethiopia is a country where the legitimacy of the government is generally linked to its ability to demonstrate that it can deliver on development, growth and poverty alleviation. In the specific context of METEC and its involvement in mega-projects, the legitimacy is also attached to the

ability to complete them within a reasonable amount of time in order to facilitate the steady progress envisioned by the Growth and Transformation Plan (GTP). According to the Director and Researcher at the Meles Zenawi Foundation (interview reference: MF-MZF-1) the social and political pressures may have put the government under the expectation to complete the mega-projects at an incredibly fast pace. The learning exercise, the costs of which cannot be precisely determined, has found the Ethiopian state hobbling and trying to find a balance between two competing ends.

On the one hand, budgetary and timeframe concerns require the state to act with a sense of prudence from the awareness of its limitations in terms of how deep it can reach into its pocket as a low-income country to fund the learning. On the other hand is the imperative to develop capable domestic firms; create new and deepen existing technological capabilities; and advance the development of linkages. What was previously anticipated to be a source of funding for the learning - the foreign currency inflows from the designated export sectors such as leather, textiles and apparel - is proving to be a bit of a disappointment, as the proceeds from these sectors are not materializing fast enough (Hauge, 2017). As a direct result, the resources currently being diverted to finance learning in complex industrial activities are under pressure and some sections of the party-state can no longer tolerate this expenditure in the face of societal pressures to put the resources to better use elsewhere.

In addition to the slow pace of learning, the potential income from the economic activity and exports of electricity, sugar and fertilizer that was expected to flow in from the mega-projects is being forgone, thus raising questions of how much longer the projects a "learning ground at the expense of quality and time" (recently appointed Head of Ethiopian Sugar Corporation, ESC website). Clearly, for some senior state officials, the objective of learning-by-doing has been far outstripped by the pressures to complete projects on time. In addition, the cavalier attitude of senior government officials, some acting as protectionist forces, makes them complicit in METEC's deliberate masking of technical problems and delays. The problem with this is that crucial information from the projects was cast asunder, concealed and not put up for open discussion, thus preventing the mushrooming of adaptive capacity in the state. It has also created a trust deficit amongst most Ethiopians whose attitude towards METEC is increasingly negative. The longer the delays in completion of the projects persist, the more contestation there arises

within the government as well as between different groups of capital who are all lobbying for foreign exchange allocation mechanisms to be implemented in their favour.

Overall, the consensus in the existing literature, that attempts to assess the progress and outcomes of METEC, a key corporation in the Ethiopian state's attempt at technological capability building and transfer and at the same time propping up an infant industry, through a lens that does not account for the dynamics of learning-by-doing and learning-by-failure, blindly coalesces with the neoclassical economics (comparative advantage/factor endowments) idea that domestic firms like METEC, in a developing country context as Ethiopia, have no business at all in attempting to build complex industrial and construction projects due to the their inexperience and unfitness to do so. However, even the failures of METEC demonstrate that development that is modeled on learning cannot be narrowly focused on the successful completion of projects in the most conventional and timely fashion. One narrow way of thinking about the failures is that they are reflective of the idea that developing countries should not be lured by over-optimism lest they become subject to inevitable failure.

The way to think about the outcomes, rather, is that the accompanying technical impediments and failures are part of a deeper transformation process that is littered with serious obstacles to learning. Learning-by-doing essentially involves trial and error, curiosity, pragmatism, experimentation, and boldness will inevitably result in mistakes, delays and cost-overruns. The Ethiopian state has, nonetheless, unlike most African government, exercised its right to fail and can, therefore, certainly add this onto its list of accolades. These challenges have been compounded even further by the enormous macroeconomic constraints facing Ethiopia such as the foreign currency crunch and wide gaps in engineering knowledge and skills in a learning policymaking environment. Those who see nothing more than failure arguably represent what Hirschman called "fracasomania"; a "failure complex" that is characterized the propensity to see gloom and failure everywhere, thus overshadowing any positive or hopeful developments, and ultimately acting as a barrier to the possibility of building onto these positive developments (Adelman, 2013).

7.3 Beyond neopatrimonialism: Weaknesses in Reciprocal Control Mechanisms as the Main Determinant of Outcomes

Politics plays an important role in incentivizing and pressuring domestic firms to learn. This role could be as important as the role of formal institutions within the state in the creation and management of rents. By combining an analysis of rent-management with the description of the political settlement, we can demonstrate the extent to which industrial policy is a highly political affair that is by no means easy to enforce (Khan, 2013). A political settlement can be simply defined as consisting of horizontal and vertical relations. Both the horizontal and vertical inclusion of elites and their networks determines the stability of a political settlement (Weldegiorgis, Mesfin and Sturman, 2017). Horizontal relations have to do with power that distributed between elite factions within the ruling coalition and have been described in chapter four. Vertical relations on the other hand concern networks of power and the distribution of that power between elite factions in the ruling coalition and non-elite groups whose support the ruling coalition depends (Admassie, Berhanu and Admasie, 2016). A major part of the vertical relations in the Ethiopian political economy setting, especially in relation to the TPLF, entails the TPLF's maintenance of a military hegemony at the centre, which has managed to achieve the securitization of development (Admassie, Berhanu and Admasie, 2016; Bekele, 2016). The TPLF-dominated military was given a sizable economic and developmental role through METEC, which has been viciously attacked for crowding out the private sector and enabling corruption among TPLF elites. By virtue of it being a quasi-extension of the national military and its roots deeply embedded in the TPLF-centered political indoctrination programmes that inculcate the principles of revolutionary democracy, developmentalism and self-determination (Adem, 2015).

While both the Endowment Fund for the Rehabilitation of Tigray (EFFORT) business group (owned by the TPLF) and METEC relate vertically with the TPLF in the broader political settlement, they are in fact embedded differently in their relations to the TPLF. This, in part, explains why the TPLF has been able to generate and manage rents in a more central manner as well as exert compulsions that enforce learning in EFFORT much more that it has been able to do with METEC. In other words, the informal political settlement relationship between EFFORT and the TPLF resembles the dynamism of formal reciprocal control mechanisms at the level of state industrial policymaking much more than that between the TPLF and METEC. This is why, in the eyes of Vaughan and Gebremichael (2011), that part of the political settlement

configuration that centralizes rents via party-owned firms such as EFFORT has, for instance earned the recognition of being consistent with developmental patrimonialism (generating and managing economic rents centrally and in a developmental manner, although having elements of neo-patrimonialism).

The EFFORT group has notably registered some key achievements, which according to Vaughan and Tronvill (2003) include the kick-starting of key sectors of economic development and industrialization in attempts to fill the gap where the small and cautious Ethiopian private sector was not ready to undertake investments in. In addition, EFFORT is said to have achieved some of its developmental objectives, including, the attraction of both local and foreign investment into the region via joint-venture agreements, technology transfer, training and skills development, with conditions for external suppliers of equipment to contribute to these objectives (Vaughan and Tronvill, 2003; Vaughan and Gebremichael, 2011)). From early on in its business operations, TPLF's political elites were able to decisively respond to surfacing corruption from within its business, including the strict separation of management and oversight functions in the corporation; giving the responsibility of the latter to a board of executives, while professional managerial appointments were made to serve on managerial positions, thus insulating the business from corrupt practices (Vaughan and Tronvill, 2003). What makes the case of EFFORT even more curious is that it has been able to do all of this without the level of transparency and norms of private corporate business that are desired by some. Their relative success highlights how policymakers shouldn't be so myopically focused on the Anglo-Saxon corporate governance model, which is often touted and espoused as the most superior, such that there is a neglect to see and understand other existing, but 'unconventional' forms of corporate governance that can also be growth-enhancing or do not necessarily slow down or stop catch-up growth.

METEC's operations could be seen in the same light of strong political links with the ruling regime that are regarded as questionable by many due to the seemingly distributive clientelist nature of the links. However, despite that the relations between TPLF and METEC management have the appearance of close proximity; they are in fact relatively distant and superficial when compared to that of the TFLF's other capital interests. This is especially true in terms of the TPLF's limited ability to exert informal disciplinary mechanisms that would compel and enforce

greater learning, even in the absence of formal reciprocal control mechanisms at the level of policymaking in the state's governance institutions. METEC's modus operandi, so far, does not seem to correspond to the standard set of institutions and governance capabilities that are often prescribed by the good governance analysis as a necessary precondition for success for all developing countries. Nonetheless, it does not deviate too far from that of party-owned firms, such as EFFORT, who themselves do not meet the typical criteria of good governance. TPLF elites, have however, not been able to apply discipline on its supposed proxies, the same kind of growth-enhancing rent-centralization, in an environment where the personalized relations appear to be quite similar and the political settlement is apparently tilted in their favour to do so.

It is not necessarily the case that the TPLF was a victim of the delusion of invulnerability to corruption and administrative ineptness when it came to their military allies. The explanation for this paradox, instead, lies in METEC wielding a different kind of political power even within a broader political settlement configuration that appears at first glance to be generalizable across TPLF-aligned capital interests. The incorporation of EFFORT's leadership into TPLF networks subtly differs from METEC in that the former is an integral part of cohesive elites in the TPLF Central Committee. The intertwining horizontal and vertical relations between EFFORT's leadership and the party, which fuses political and economic interests closely together in Ethiopia's broader ethnic federal political framework, make it possible to apply internal disciplinary protocols and mechanisms on the managers of the party's economic assets whenever their behavior is found wanting. Harsh political sanctions for corrupt or rent-seeking practices that bring financial harm to the corporation have been highly likely to follow.

METEC, on the other hand, is a result of a far complex power brokering arrangement that seeks to accommodate and appeases the military, not just as a mere satellite of the TPLF, but as an incredibly powerful entity with its own set of coercive powers. Therefore, the incorporation of METEC's managerial class into TPLF-networks does not make it easy for the party to politically discipline the military corporation. While the dominance of the TPLF in Ethiopian politics is tied together to military force and repression that makes authoritarianism possible, the military has an incredible amount of leverage over the TPLF and the political costs of enforcing implementation at METEC are perhaps too high. This has given military elites absolute control over the

corporation's economic interests and an incredible amount of power that allows them to resist the demi-god role of both the party-state and its disciplinary measures. As METEC became incredibly powerful in the control of resources, a tacit complacency regarding the enforcement of discipline on the part of political elites became more pronounced. In a bid to avoid upsetting the conditions set out when the corporation was established, it became more important to manage good relations with military elites rather than discipline them.

What these differences tell us is that, whilst firms such as METEC and EFFORT may, at a superficial level, display similar characteristics of non-transparency, unconventional corporate governance, being governed through personalized relations, and seemingly suspiciously corrupt links with political elites, they are embedded quite differently in the political settlement. While the desire may very well be to centralize the management of rents at the top within the state or the party-state in the case of Ethiopia, the different ways in which the firms are embedded in the political settlement carries the implication that learning has to be regulated quite differently and will have divergent and varying outcomes. However, transforming the political settlement embeddedness or governance-type is not something that can be accomplished overnight nor is it a guarantee for far more internally disciplined, focused and less prone to descending into rent-seeking METEC. It does, however, mean that the faction of ruling elites that want to push for learning must invest in an understanding how the informal distribution of power between themselves and capitalists and outside the formal structure of state institutions, may constrain or hinder the implementation of learning they desire to see happening (Gray, 2012).

Where does all of this place our analysis in relation to existing literature? The findings of this thesis, like much of the existing literature (Gebresenbet and Kamski, 2019; Gebregziabher, 2019), do point to evidences of corruption and financial irregularities playing out at METEC, where the military is a key partner, both political and economic, to Meles Zenawi regime's developmental state aspirations. However, this thesis escapes the tunnel vision which some of this literature suffers from in its inadequate explanations of the mounting challenges faced by METEC and the state. These explanations have simply reduced the origins of the corporation and all the emerging challenges as a fulfillment of the state's intention to buttress corrupt clientelist networks in a strategy that had no economic merit whatsoever other than for personal

accumulation of wealth to military elites in a powerful security organisation in exchange for their political loyalty to the TPLF.

The existence of rent-seeking and corruption; abuse of executive powers by management to execute functions outside of the realm of METEC's mandate; flouting procurement and financial procedures to benefit friends; and collusion with politicians to embezzle funds out of the corporation by distributing rents to enrich themselves, which were all ubiquitous in East Asian developmental states (Khan, 2000) should not necessarily result in disproportionately antagonistic view that negates or shy's away from giving credit and attributing the evident aspects of developmentalism in METEC to the Ethiopian developmental state project.

Overall, I resist the temptation to excessively focus on what can be easily quantified or appeals to popular opinion (i.e. rent-seeking and corruption) and prioritize it as important, in the presence of a difficulty to quantify important elements as learning-by-doing. The evidence presented in this thesis has managed to shift the focus from what has up to now been firmly resting a (dominant) narrative that is subtly based on notions of neopatrimonialism. Such a narrative makes it possible to arrive at conclusions that the Ethiopian developmental state does not exist or that the apparent failure of instruments such as METEC serve to unequivocally confirm the failures of the Ethiopian developmental state.[20] In this thesis, these challenges have now been properly located within a broader context of the difficulties of undertaking extraordinarily challenging projects in a political economy environment where it has been difficult for the state to apply the reciprocal control mechanism that would allow it to resist the growth-reducing rent-seeking elements of a powerful military corporation as well as other equivalent forms of discipline that would subject those who are the custodians of industrialization to monitorable performance standards, as was the case with East Asian developmental states (Amsden, 2007).

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In recent times, and more especially after the revelations of corruption at METEC, the media has disproportionately focused on the negative aspects of the corporation, which has in one way or another influenced the excessively negative reputation of the corporation. This unbalanced media coverage has adopted a particular language that mimics the problematic logic of neopatrimonialism in attempts to show that the surfacing story of corruption and failure vindicates these reductionist narratives. This surge in media coverage of the negative aspects of METEC has, in a problematic way, coincided with academic literature's treatment of the supposed failures of METEC and its excessively critical view of the corporation's emergence and performance.

7.4 Edging Closer to a Developmental State: A Developmental Ethos and Reclaiming the Right to Learn

The question of the possibility of an Ethiopian developmental state is not without contradictions as the idea itself represents many different things to different people. Clapham (2015:10) has strongly affirmed Ethiopia as being "(o)ne of the clearest examples in Africa of the application beyond East Asia of the idea of the developmental state". The country first formally embraced the developmental state model in the early 2000s, with Prime Minister Zenawi's emphasis on the need for Ethiopia to be on a trajectory of sustained economic growth if it were to survive as a country (Nicolas, 2017). The developmental state has since been heralded as the raison d'être for the nation's impressive growth rates and infrastructural development (Desta, 2019). Cramer and Chang (2015) have argued that while it may be premature to declare Ethiopia a developmental state, "a much clearer strategic commitment to structural change and long-run national development has emerged".

Yet, for some the Ethiopian developmental state is either a pipe dream that has never existed, prematurely failed or an altogether useless category. Gebregziabher (2019b) argues that behind the façade of Meles Zenawi's developmental state project, which is premised on the idea that 'a developmental state should monopolize rents and allocate them strategically for value creation over the long-term', is a malevolent practice that has seen the exclusive promotion of 'revolutionary democratic forces' such as party-owned (endowment) enterprises and military enterprises as well as the so-called 'developmental capitalists'. Woldegebrael (2018), on the other hand, recognises aspects of developmentalism in Ethiopia's approach to the construction of large scale development projects, such as the Gibe III hydro-power dam. Ultimately, however, he argues that the EPRDF's self-proclaimed developmental state is a political project as opposed to it being a model of economic development/industrialization as observed in other areas- particularly in the East Asian countries.

Whatever the debates may be regarding other aspects of the Ethiopian state, the Ethiopian government has unambiguously satisfied one particular condition of a developmental state; a clear commitment to development. Oqubay (2015:72) associates the developmental nature of the Ethiopian government with "the exclusive pursuit of development (vision and practice); public

mobilization around a grand vision; and state capability, embeddedness, and autonomy". This commitment, I have found, has been preceded by a gradual dialectical process of building an internalised developmental ethos and taking firm decisions on how to chart and dictate the course of the nation's development on its own terms. It has tended to involve reaching a consensus among different state and political actors, striking a balance between attaining political buy-in or acquiesce based on the existing political settlement, and advancing a part academic and part ideological project as well applying pragmatism.

The decision taken to place METEC at the centre of Ethiopian industrialization and as the custodian of technology transfer efforts was itself, coherent with Hirschmanian (1967) features of over-optimism, developmentalism, tough political choices and ambitiousness on a grand scale, without which it is impossible to craft a developmental state, as evidenced by the ubiquity of these characteristics in successful East Asian developmental states. The Ethiopian state's unique decision-making, governance and policy independence and autonomy derive from the country's exception of never having been colonized (except for a 5 year Italian occupation in the 1930s) on the African continent (Fourie, 2011; Markakis, 2011). The developmental ethos that has been readying the Ethiopian state to take on complex projects with domestic capabilities has been a work in progress from as early as the 1950s. Policy independence, claiming developmental state ideology and emulation of East Asian developmental states (including China, South Korea, Taiwan, Japan), indoctrination programmes in the Ethiopian army derived from principles of developmentalism and self-determination (Adem, 2015), lessons acquired from the decision-making clout in the party business have been some of the channels through which the imbibing a developmental ethos has grown. However, putting the model into practice would not be complete without the developmental state ideology being accompanied by Hirschmanian-like 'attitudinal shifts' that prize "the hegemony of developmental discourse" (de Waal, 2018:2), which according to Meles Zenawi is one of the key components of a developmental state.

State-led intervention through state-owned enterprises has been preceded by the practice of what Weis (2016) has called vanguard capitalism. METEC's genealogy can, thus, be traced to the TPLF's knack for supposedly 'over-ambitious' projects since the early 90s. To certain degree, it has been through the demonstration effect of party-owned enterprises in large-scale manufacturing sectors, such as cement, textiles, tanneries, breweries, and a malt factory;

pharmaceuticals, marble processing, and agro-industries (Oquabay 2015) that the confidence to undertake mega-projects through METEC and domestic capital has been cross-fertilized into the techno-bureaucracy within the state. Oqubay (2015:71) argues that the endowment firms have been important for a number of reasons, including playing a pioneer role in long-term investments in large-scale manufacturing in sectors where the private sector has been absent or shown little interest because of the associated risks and uncertainties; activating linkages in particular sectors; narrowing regional imbalances; and generating employment.

In addition, the empirical evidence presented in the preceding chapters highlights the embodiment of a bold ambition for learning, within both the Ethiopian state and engineering industry circles, as expressed in the desire to take on the complex and far more rewarding route to technology acquisition and project development through domestic industry. To a large extent, it is in fact Ethiopia's 'vanguard capitalism', which gives an important role to political elites in the market and state-building process, but has today become a byword for corruption and incompetence, that has made the 'infusion of confidence' in the Ethiopian state's decision makers possible. Experiments of the past, which have consisted of ambitious industrial projects even by the standards of the time, have arguably made it possible for state actors and policymakers to replicate their confidence much more aggressively, face uncertainty and difficulty as well as to take risks that they would have otherwise not taken in these risk-laden mega-projects.

Beginning in 2006, the planning for the GERD was a secretive operation in Meles's inner circle. The government ordered updated site surveys, which were conducted between 2009 and 2010, and engineers submitted a dam design in November 2010 and the project was finally revealed in 2011 as a five year project (International Crisis Group, 2019). When the construction of the dam commenced in January 2011, the information pertaining to engineering, water security and planning, dam operations was not available to anyone else, except those in Zenawi's inner circle. Soon afterwards, diplomatic tensions with neighboring countries, Sudan and Egypt, would ensue almost immediately after the beginning of construction, due to claims of livelihoods, much of which depend on the Nile, being under threat from all Ethiopia's eminent control of upstream waters.

The use of METEC would prove to be strategic for the push back against any internal, regional and international forces that, from the moment of that the GERD was revealed, have sought to undermine the Ethiopian developmental state and a key project that is so central to the Ethiopian renaissance project. It has also served to confirm elements of the adaptability and anti-fragility phenomenon that were observed by Oqubay (2015) in Ethiopian industrial policy. Internally, the promulgation of the developmental state as well as the significant political shifts of the early 2000s and the political developments that would follow in that decade have been important for the progression towards a tighter relationship between the military and economic development. The idea of giving greater space to SOE's (even of a military nature like METEC) as the centerpiece for national firm formation and domestic technological capability building, and channeling these into productive investment are important features of developmental states.

Accommodating the military in Ethiopia's economic sector gained most of its traction under Zenawi's newly promulgated developmental state and was inspired by the East Asian developmental state type model, especially in the Korean model of development. His own academic work (Zenawi, 2012; nd) was already reflecting on the potential of the military's developmental role, in addition to the security and political imperative. Additionally, the academic work of Dr Cosmos Ochieng on 'developmental militarism', a scholar who had a close personal and working relationship with Zenawi by virtue of his links with the Ethiopian Development Research Institution (EDRI), also appears to have been important in influencing Zenawi towards this line of thinking (interview reference: MF-MZF-1).

An interpretation of Ethiopia's Foreign Affairs and National Security Policy and Strategy (2002) suggests a deep and long-standing desire in the Ethiopian state to give space to the role of the military in economic activities, particularly in the metals and engineering sector, as well as to use and prop up then existing military technological capacity to further develop capabilities in the economic sector (cited in Abebe, 2018). The vision states that "the factories which were originally designed for solely military purposes could be geared, wholly or partially, to produce commodities needed by the civilian community, contributing to technology transfer between the military and the civilian sector. In this manner, the economic and defense sector can cross-fertilize each other, helping to reduce the negative impact of military spending on the economy".

The already close relationship between Meles Zenawi and the military would be further solidified in the aftermath of the TPLF-split that as it became clear that increasing the share of the military in Ethiopian business interests would serve as a coup-proof strategy and make room for political stability, which appeared to have been waning. Further, the EPRDF's loss of the 2005 elections in Addis Ababa, which in turn resulted in the estrangement of the business community from the EPRDF due to its apparent support for the opposition, further accentuated the need for state-aligned enterprises for rent-centralization, of which METEC would become one of them.

At the level of dealing with and warding off external threats, the adoption of learning-by-doing, through METEC, in the particular case of the GERD was forged directly in the crucible of a harsh political and political economy climate where the state and the EPRDF demonstrated the ability to be adaptable and not recoil in the face of heighted geopolitical conflict, apprehension and mounting pressures from international neoliberal establishments. The press statement (Reporter, 2017) by Former Ethiopian Minister of Communication and Technology and Chairman of the TPLF, Dr. Debretsion Gebremichael, captures the essence of how the Ethiopian government, under threat and vulnerability, had to adapt to circumstances on the ground and take the bold decision to do prop up and engage domestic capacity, if national survival and independence were to be maintained:

> *As you know, the electro-mechanical aspect (which METEC is in charge of) of the project is almost half of the entire project. And had we decided to put a foreign company in charge of this project, the challenges we could have faced would be unimaginable. For one, given the nature of the project, the level of diplomatic pressure we could have been subjected to, would be quite considerable. We had no guarantee that foreign contractors would carry out the work in the face of intense diplomatic pressure from their governments and other countries (mostly due to Egyptian hostility). Worst case scenario, they could have abandoned the project midway. This is something we considered carefully before we had started the project. In fact, if it was up to us, we would have loved to do everything using local capacity.*
>
> *Frankly, we could not afford to make it vulnerable. Even after taking such precautionary measures, we were not completely immune to foreign pressure with regard to the GERD. We have witnessed how the civil works contractor, the Italian company Salini, was pressured to abandon*

the project and leave Ethiopia. The pressure came from different directions: through the European Union, Italy and other countries. Fortunately, Salini understands the pressure very well and knows the country intimately as it was involved in different projects in Ethiopia for many years. You can imagine what would happen if the company was not Salini. Financial bargaining was also another easy way of influencing companies to leave the project. Mind you these lobbying groups do have the capacity to offer attractive financial rewards to companies. So, one of the mechanisms with which we were able to avoid pressure was by developing local capacity.

This experience demonstrates just how the rhetoric and practice of developmentalism under a proclaimed developmental state can be reinvigorated even by external geopolitical threats that have the potential to cause fragility and paralysis, only if the state has the political resolve and decisiveness to innovatively confront such threats when they arise. The Foreign and National Security Policy (2002) cited in Abebe (2018) document illuminates a forward thinking state that, as far back as the early 2000s, understood its positionality and the regional context in which it was framing its own development where the developmental capacity of the military could have an important role to play, not only as far as regional conflicts is concerned, but including issues of national prosperity and development. It is in light of this policy, which states that: "it must be clear that the primary objective of building up our defense capacity is that of deterrence…Our objective is to prosper and not to achieve a state of military arrogance" that the corporation's role in Ethiopian industrialization can be seen. It is a form of 'deterrence' playing itself out in the forward march of Ethiopia building its flagship developmental state project in the face of mounting political pressures and threats to Ethiopian livelihood.

It is thereby no surprise that the notion of an Ethiopian developmental state is intertwined with, and to some degree, is conceptually compatible with and intricately intertwined with features of the Ethiopian developmental state pointed out by Hailu (2019) such as securitization and narratives of 'national survival' and 'national security'. So central is METEC to these narratives and their overall association with Meles Zenawi's call for economic transformation that his photos are visibly mounted up at the entrances of and around the various METEC compounds in a similar fashion to the mega-projects, and especially GERD, to maintain the idea of their paramount importance in the broader context of the Ethiopian developmental state. In this

regard, the emergence of METEC Thus, METEC's emergence and modus operandi is in direct lockstep with the developments of the then proclaimed developmental state.

What is strikingly interesting about the non-conformist way in which Ethiopia has gone about constructing the GERD, for instance, through the lead of indigenous capital and significant internal financing, is in how it is quite a rarity for developing countries today to follow this same strategy when constructing hydropower projects. A major portion of finance for such mega projects in most African countries is derived from either international lenders such as the World Bank or the African Development Bank (AfDB) as well as internal mobilization of resources as a secondary priority. The construction of mega-projects of the GERD's magnitude, for example, is often led by an international consortia comprised of leading and reputable firms from outside the continent that bring together various experience and expertise to the project. In addition, International Finance Institutions (IFI's) such as the World Bank often have a supporting role in either technical support or playing an advisory role. It is not a rare occurrence for projects that are sponsored or supported by IFI's to have limited legroom to deviate from an initially agreed-upon strategy, thus getting locked into rigidity concerning the progression of a project no matter the social or developmental costs. Deviations in strategic direction, as was the case with DRC's Inga III, is often regarded as contemptuous and even attracts suspension of funding and withdrawal of support (Fukuyama, Bennon and Batain, 2020). With an earlier Dam construction, the GIBE III Dam, the Ethiopian state in 2006 decisively awarded the contract in a no-bid contract to Italian construction company Salini Construttori S.A, thus defying the World Bank's procurement policy and had to face the consequences of forgoing funding from the World Bank (International Rivers, 2009). By doing so, Ethiopia could break free from the requirements and restrictions of traditional Western financiers that usually come with the execution of such mega-projects, thus allowing Ethiopia to involve local contractors more significantly was the initial mobilisation of domestic sources of finance for the GERD (UNECA, 2017).

Ethiopia's project approach, more specifically in relation to the GERD, differs from the Western approach, which naturally shies away from projects with a high implementation risk such as hydropower projects and tends to lean toward lower-risk clean energy projects. Ethiopia's approach also deviates from the Chinese approach which tends to prioritize the delivery of hydro

projects, such as witnesses in Uganda's Karumba and Isimba hydroprojects, via the turnkey project approach using Chinese subcontractors, and thus bearing little fruit to domestic learning. The Ethiopian state, by involving domestic capital quite significantly has been able to push back against the imposition of a Western agenda and its anti-learning bias (Fukuyama, Bennon and Batain, 2020). This reflects Ethiopia's explicit rejection of neoliberalism and a flexing of its policy autonomy muscles in unprecedented ways. It not only signals the quality and strength of this generation of leadership, but is in many ways believed to have laid a firm foundation for divergence from the norm in the state's planning, financing and execution of the country's biggest and most important mega-projects in the future. Projects such as the GERD, the integrated condominium housing programme, sugar projects, etc. are mostly laden with risk and exhibit bold deviations from conventional best-practice approaches that are touted and adopted in other developing countries due to being safer, much more prudent and guaranteed to deliver the end product with minimal derailments and failures. METEC's leadership, on the other hand, had a clear stance from the very beginning that "it does not matter if we fail as long as we learn from the mistakes and correct it" (Ethiopian Society of Mechanical Engineers, 2010:38).

While policymaking in many SSA countries is increasingly characterized by the fear of making policy mistakes, and therefore, models economic policies on best-practice approaches in line with mainstream economic theory, Ethiopia has for the most part been devising home-grown solutions via experimentation and trial and error in the area of industrial policy (Oqubay, 2015). The Ethiopian government's decision to place METEC at the center of its state-led industrialization resembles and embodies the developmental ethos of developmental states in the 'Rest' who owe much of their success to the implementation of unconventional protectionist policies, giving greater space to SOEs in industrialization, getting the prices wrong and understanding that learning-by-doing is not about ensuring fail-proof interventions that will undoubtedly succeed. The strategy adopted by the Ethiopian state signifies two critical aspects that are of significance to those interested in the 'over-optimism and ambition' embodied in the old development economics tradition, which has now almost vanished off the development scene in SSA. For, the real political commitment (as described by Amsden) to support aspiring domestic industrial firms is a metaphorical pulling of a rabbit out the hat that many countries on the African continent have not been able to do despite rhetorical wishes to do so. What makes the

Ethiopian state edge closer to a developmental state is that it is able, through learning-by-doing, to ambitiously untangle itself from the fear of failure to make development decisions when others seem to be stuck.

7.5 What Future for Domestic Capital?

In 2017, the former Prime Minister Hailemariam proclaimed that Ethiopia has "…been implementing effectively developmental state policy" and "as a result, a number of success stories have been unfolding in this regard" (Ethiopian Herald, 2017b). Less than a year later, the installation of Prime Minister Abiy Ahmed brought along with it a change in the climate of opinions from within the state, the ruling party and the media concerning key aspects of the developmental state that were previously deemed as working well. While there had been some internal dissatisfaction within the EPRDF in relation to some elements of Ethiopia's political economy even before the death of former Prime Minister Meles Zenawi as well as increasing assertiveness of especially the Amhara National Democratic Movement (ANDM) and the Oromia's Peoples Democratic Organisation (OPDO) which often tipped over into frequent waves of anti-government protests by Ethiopia's two largest ethnic groups (Oromo and Amhara), these mainly pertained to the unsatisfactory balance of power within the EPRDF coalition, which favoured the TPLF (Lavers, 2019; Vaughan and Gebremichael, 2011; Weldegiorgis, Mesfin and Sturman, 2017). The economic and political reforms ushered in by the new Prime Minister when he assumed control of the EPRDF at the beginning of 2018 entailed a unilateral dismantling of the EPRDF's current and existing political, economic and security strategy, which necessarily kept the developmental state project intact (Desta, 2019). The reforms also largely appear to gradually embrace a path that is reflective of a turn towards neoliberal ideas and practices in the Ethiopian state.

On the political front, the leeway for ushering in the policy reforms has, in part, been made possible through the elimination of the TPLF from the EPRDF (now Prosperity Party). As the leading unit of the former ruling coalition, the TPLF had a strong role in shaping and directing Ethiopia's industrial policy and industrialization agenda and has sought to build its legitimacy by using its high degree of political and rent centralization towards developmental ends, which enabled the country to achieve rapid economic growth, especially over the last two decades as

well as delivering socio-economic progress through industrialization (Lavers, 2019; Weldegiorgis, Mesfin and Sturman, 2017). The TPLF is characterized by internal cohesion, a strong central leadership with the ability to centralize power and economic resources, unity, high levels of support and compliance amongst its own people, (Vaughan and Gebremichael, 2011) and a greater degree of consistency in paradigmatic ideas that underpinned the developmental state (Lavers, 2019). The elimination of the TPLF began first with a deliberate shrinking of its influence in the EPRDF's policy and thought leadership spheres through the removal of all, but one, of its most powerful figures from the Prime Minister's 20 member council of Ministers as well as the Army Chief of Staff, Intelligence Chief who were the most prominent figures beholden to Zenawi's developmental state project (Africa Confidential, 2018; Fisher and Gebrewahd, 2018).

Intra-elite relations within the EPRDF had for three decades held a strong appearance of cohesiveness and stability (Weldegiorgis, Mesfin and Sturman, 2017). Bubbling under, however, have been some major vulnerabilities and fragility caused by ethnic tensions and contestations that remained unresolved due to the uneven distribution of political and economic power across ethnic groups (Vaughan and Gebremichael, 2011). This has now ruptured and led to the break-up of the EPRDF (Laver, 2019). The ascendance of the new leadership and purging of the TPLF from it has led to what appears to be an erosion of the ruling party's intellectual and ideological underpinnings, which are rooted in an intertwined socialist thinking and Marxist-Leninist orientation (Weis, 2006). These ideological underpinnings and principles are potentially being impacted by the EPRDF's purge that saw the imprisonment and replacement of TPLF-aligned leadership with those who are seemingly more loyal to the Prime Minister's cause. In part, Ethiopia owes its state-led industrialization model and its 'vanguard capitalism', which Weis (2016) describes as "distinct from the free-market capitalism promoted under structural adjustment and from the crony capitalism that was its result in other African countries, but also from the bureaucratic state capitalism of the East Asian economies" to the aforementioned underpinnings.

In its place is a replacement of a kind of pragmatism that draws from dominant strands of international scholarship on liberalization and democratization (Desta, 2009). For instance, the December 2018 IMF country report on Ethiopia lauded the Prime Minister for his intention to

open up some parts of the economy to competition and encouraging private investment. The IMF, which is known for criticizing the Ethiopian government's economic policies in the past, welcomed with a congratulatory tone, the government's expression of intent to partly privatize some of Ethiopia's biggest and profitable SOEs such as the airline carrier, Ethiopian Airlines. Unlike the open commitment to the partial privatisation of SOEs such as Ethiopian Airlines, which have been doing relatively well, the heralding of METEC as nothing more than a litany of failures by the new regime entails a more subtle approach that is slowly moving towards the ushering in of a Trojan horse of market-centrism in the Ethiopian state. Corporations such as METEC remain future candidates for privatization; the scaling down of their involvement in the economy is a signal that a very strong pendulum in Ethiopian economic policy is currently underway.

After being pushed too far in the direction of heavy-handed state intervention over the last two decades, it is now perhaps beginning to go way too far in the opposite direction towards market-centric and neoliberal practices (Gebre, 2019). Others seem to be pleased with these changes since, according to them, the developmental state has anyway run out of steam. Others, on the other hand, do not necessarily interpret the new economic policy reforms as a threat to the developmental state, but actually see it as necessarily compatible with it. The idea being that as a country moves towards middle-income status it needs to implement deregulation, have much less state control, privatize some of its assets, and liberalize its trade and finance sectors more aggressively. From de Waal's (2018) perspective, however, the key question for Ethiopia at this crucial juncture is whether the country has reached the stage of development where any such liberalization is possible without losing the developmental vision and ethos? In specific relation to the metals and engineering industry, local industrial capacity in both the private sector and the state does not seem to have developed sufficient enough to create a critical industrial base that would allow for an industrial development that is anchored in private sector forces.

I would agree with De Waal's (2018) warning that the privatization reforms, for example, could satisfactorily result in short-term gains on the one hand, but their other likely and adverse outcome would be takeovers by those with an eye on windfall profits and future rent-seeking through access to influence over the state, namely international capital. It is still too soon to tell what effects the medicine being administered by the new regime to the Ethiopian economy will

have and the consequences of pulling the carpet from under METEC's feet are yet to be revealed. One can, however, speculate together with De Waal (2018) that the adoption of full-blown neoliberalism may very well succeed in forging an economy artificially exhibits characteristics of a dynamic market economy and a flourishing liberal democracy, whilst the reality would be nothing but erosion, forfeiture and undermining of the impressive gains of sustainable development, social welfare, functioning institutions and foreign policy autonomy of the developmental state.

From a praxis point of view, the neoliberal stance under the new regime has taken the approach to draw on the expertise of business consultancies such as McKinsey and PWC on key issues relating to privatization and liberalization (Reuters, 2018b). In accordance with the dictates of best-practice approaches of business consultancies, the completion of all mega-projects will from henceforth be guided by a set of "precautions" so that "mistakes" are avoided. Such a cautious approach is a far cry from the endogenous learning-by-doing approach of the Meles Zenawi regime which, according to Prime Minister Abiy Ahmed, awarded the GERD, for instance, to people who had "never seen a dam in their life". The new approach is, unfortunately, akin to the 'easy to copy and paste' approach taken by policymakers who think that practical tools that have been applicable elsewhere can be used as low-hanging fruit ideas that may be suitable to their own policy context. Drawing on external expertise to provide answers to the development questions faced by Ethiopia carries the implication that the policy experimentation that Ethiopia has been engaged with (Oqubay, 2015) will be gradually jettisoned and make way for an approach that follows some kind of policymaking recipe from the West with the aim of avoiding policymaking mistakes.

The changing political and economic policy scene has coincided with the ousting of domestic capital (METEC and its domestic partners) in favour of foreign contractors to complete all mega-projects. The ousting of METEC has happened via the Trojan horse of what Hirschman called a "action-arousing gloomy vision" that emerges to question the existing paradigm and its contributions (Adelman, 2013). Ironically, as it also applies to the broader economy, apart from a series of well-articulated 'PR exercises' and pronouncements that flow from supposedly 'good intensions' (Africa Confidential, 2018), there isn't an equally well-articulated strategy to guide how the good intensions will be attained, and whatever action that is taking place at institutions

like METEC is not being ushered in "by bureaucracy-led decision making" (Gebresenbet and Kamski, 2019:347). Essentially after three years when METEC's forced retreat was announced, all that been done is to give the corporation a new name - National Industrial Engineering Corporation – as well as split it into two separate entities with one entity focusing on the commercial industrial project manufacturing and the other on military equipment under the Ministry of Defence and substantially limit its future involvement to simple tasks such as fabrication and welding (Fortune, 2018). As a result, the corporation and almost the entire domestic value chain have been suspended and replaced with international firms for the expedient completion of the megaprojects. This has put the localization of inputs and strengthening of domestic linkages into abeyance indefinitely. Without a properly articulated strategy and no conditions attached to compel the latter to operate as developmental partners, whatever the momentum of learning and industrial formation that was beginning to take place stands to be reversed.

Some economists seem to be pleased with the decision taken by Prime Minister Abiy Ahmed's to embark on a road that dismantles METEC because of the perceived belief that it has miserably failed. An affirmation of this amounts to falling into a simplicity trap that causes one not to appreciate the reality of other factors. It is not so much that METEC has failed or that state intervention has proved ineffective, but that there is a push back against the perceived (possibly real) excessive influence of one particular group; the Tigrayans. An analysis of this pushback in terms of Khan's political settlement framework circles back to the inability of the TPLF to broaden the political settlement and being more inclusive of other ethnic groups in industrialization that involves METEC. The obvious political game at play is that those who are currently ceasing power want to deliberately undermine the economic, political and military power of Tigrayans. METEC then, as a huge part of that power concentration, is a convenient victim of this power play and any excuse can be used to undermine the corporation's advancement.

Interestingly, the rejection of the developmental state model has coincided, at most, with the desire to see change in the distribution of political power and socioeconomic benefits between political parties in the EPRDF and their ethnic constituencies. What superficially presents itself

on the surface to be a pure and strong pendulum swing in Ethiopian economic policy as well as an overnight change in ideological wind may very well, instead, in reality be strongly dovetailing with the gradual, but mounting frustrations and discontentment with the Ethiopian political settlement. An extreme level of authoritarianism has, to some extent, made it possible for the party-state to direct resources to one dominant group, the Tigrayans, but failed to move swiftly in generating results that could sufficiently buy-in the acquiesce of other ethnic groups. METEC's growing economic aspirations and its unfettered influence over important developmental problems had for many years posed fears for many and were spilling over to become a source of socio-economic frustrations and political tensions. The corporation's links with a TPLF-dominated military were seen as potentially putting the TPLF in a position of strength and ability to solidify its authoritarian rule and longevity by virtue of its close alignment to the military.

The problem with the pushback, although desirable for the realignment of the political settlement so that it reflects a better balance of power, is many-fold and cannot be exhaustively outlined. The main problem, as far as this thesis is concerned, is that Ethiopia finds itself in a serious quagmire in that, while the dominance of the TPLF and the Tigrayans in the economy is creating political tensions due this group being a minority, it is the group that has been tied fairly strongly to industrialization policy and industrial interests and over the last thirty years. TPLF-linked business groups can be primarily characterized as ones with which there has been fairly strong enough compulsions for it to move into productive sectors, including manufacturing.[21] There is also some evidence of an RCM-style relationship that has emerged between these business groups and the TPLF's leaders, who have also played a very important role in bureaucratic governance and as technocrats. In key organizations such as METEC, there also appears to be an over-concentration of this group that isn't big enough to acquire the political legitimacy that will allow continuing to invest in developing its productive capabilities.

[21] From the early 1990s, Ethiopia has seen the emergence of four endowment conglomerates, each in one of the federated states and associated with the ruling party in their respective states; EFFORT for Tigrayian region, Tiret for the endowment in Amhara; Tumsa in Oromia; and Wendo in the SNNPRS (Vaughan and Gebremichael, 2011). The centrality of ethnicity expresses itself in these endowment conglomerates and the exercise of patronage and distribution of rents is common (Admassie, et al. 2016). The profile of firms under the EFFORT business groups suggests that it is the richest of all endowment groups.

To be clear, the major problem that confronts Ethiopia is not just simply that there has been backlash against a particular ethnic group in key corporations such as METEC. The challenge is that the interest groups, ethnic or whatsoever, that appear to be pushing forward to gain control over the economy do not seem to be as strongly tied to industrial interests.[22] This makes the likelihood of the capitalists that could emerge from these other interests groups to actually demand that resources be shifted to them for productive use not as strong enough. All of this makes some of the protection of the economic and political interests of the TPLF and Tigrayans somewhat vital because of the very imperative of having an emerging domestic industrialist class if there is to be a relatively successful industrial policy and industrial development. The trouble is that despite any explanations that would, in the least, exonerate it, the TPLF is now viewed with far more skepticism and any attempts to defend (Koenig, 2018) or reassert itself and restore its image are seen by the current ruling coalition as nothing more than tactics employed to keep its hands firmly gripped on the economy's resources as well as to maintain its political survival in the face of waning legitimacy (Gebregziabher, 2019b).

Going forward, the two key and interrelated questions are: 1) Would it still be possible to have progressive voice emerge from what might constitute a pressure group in attempts to bring the pendulum a bit closer to more proactive industrial policy, with some continued level of industrial policy support from the state? And 2) has METEC managed to develop sufficient local industrial capacity in Ethiopia with sufficient ability to sustain itself through the demand for industrial products for a range of sectors in Ethiopia – such that they may be able, even if the rug is pulled from under METEC's feet, to grow and become a voice that could potentially put policy back to supporting the development of this class? Should the TPLF's political and economic power be frustrated for a long time, the procession of industrial formation and learning from here on, it seems, rests on the likelihood of another pressure group to emerge, especially from within the ruling coalition (EPRDF minus TPLF, now Prosperity Party), to give a voice that might put industrial policy back to proactively supporting the development of a local industrialist class. It is not clear how far the pendulum has swung towards neoliberalism for there to arise a remnant

[22] There is little leeway for organized interests based on individual-based representation that echoes the liberal principle of citizenship to influence development and economic policies (Admassie et al. 2016; Bekele, 2016)

of elites within the ruling coalition to silence the sirens of neoliberalism. If that does not happen, then what is likely to happen going forward is that the turnkey neoliberal approach to industrial development will blunder forward without much resistance.

However, through this thesis' problematization and documentation of the extent to which there has been some domestic private sector industrial formation and emergence, it seems that the level of learning and development of that domestic industrial base that has already taken place at METEC or in the private sector via METEC is enough to give us a sense that a sudden change in Ethiopia's development strategy does not mean a complete road of no return. In other words, the strides already made in learning and the little domestic capital formation in the metals and engineering sectors encourages us to think that even if METEC is de-scaled, put into temporary abeyance or there is a total turn to total privatization, there is now enough to generate some level of self-reinforcing mechanism by which a new group of capitalists in the private sector are going to start placing progressive demands on the state to support their interests.

7.6 Synthesis

The chapter has weighed in on the government's intention of building domestic project execution capabilities against the challenges that the corporation faces against the headwinds of a steep and lengthy learning curve, particularly in the areas of project execution capabilities, investment capabilities, and the agility to solve technologically complex problems in light of the systems-quality complexity of projects. The study finds that the planning processes concerning projects have been subject to serious challenges, resulting in failures in the defining of project boundaries and targets with precision and reliability. This complexity has put METEC on an upstream swim despite some efforts to aggressively channel both existing and currently in-development domestic project execution capabilities. Whilst there have been lingering moments of technological inertia, there have also been notable efforts at navigating a terrain of complex technology systems.

While the findings presented in this chapter do not in any way reveal an overwhelming success in the processes and outcomes of technological capability building, they do enlighten the ongoing debate within existing literature by debunking METEC pessimists' characterization of METEC as nothing more than a long list of a litany of failures resulting from the total looting of

resources. Arguments that oppose state intervention in Ethiopia can, thus, be challenged on the premise that even some of METEC's failures are not necessarily an indication that there is no possibility for an Ethiopian developmental state to emerge. The position of the accumulation of productive and technological capabilities in the Ethiopian metals and engineering sector needs to be understood in a context of a first attempt at manufacturing in a sector that exhibits increasing returns to scale (IRS) will typically have the initial outcome of inefficiency. This is precisely because the firms entering this space have not yet acquired tacit knowledge, complex skills and competencies required for the managing the labour processes or for organizing the industrial processes and efficient routines, which themselves are subject to evolving as learning by doing progresses.

In complex ways, the chain that links the three administrations of Zenawi, Hailemariam and Ahmed is a conundrum whereby the blindness at the initial stages is was not countered by unanticipated creativity (Hirschman, 1967). In other words, the problem with METEC and the country's projects is not so much that they have not proceeded with the desired precision and success, but that after an initial phase of learning, that entailed the capacity to make independent development decisions, a second phase of learning did not kick in at the moment when it was most needed. This second phase of learning in Hirschman's framework involves a great deal of agility in government intervention by turning to political, administrative and technical creativity and problem-solving that would overcome any difficulties presented by initial errors, under-estimations, delays, cost-overruns, managerial and other technical difficulties. Faltering learning on the part of the two preceding regimes, the second one most especially, has rendered it easy for the new incumbents to readily, and perhaps prematurely, pronounce failure upon METEC and its projects. This means that the home-grown boldness developed during the first decade of the developmental state has been substituted by what appears to be the adoption of an anti-learning bias that not only outsources the outstanding aspects of the projects to international capital, but has the potential to cause Ethiopia to rely on expertise that is external to the state, thus destroying the prospects for capability building.

One can, thus, contend that the emerging consensus that condemns METEC to nothing but a long list of a litany of failures is, in some cases, "…engendered…by the desire to reprove further an oppressive regime or an unjust society" (Adelman, 2013:146). It would be reassuring for those

who want to see the TPLF and its dominance of politics and the economy overthrown – a move from authoritarianism towards a more democratic dispensation – to see a powerful corporation run by the TPLF-aligned military to be condemned to failure. In the midst of the unfolding reorganization of the ruling elite in Ethiopia, METEC has become an ideal target because of being perceived as non-inclusive or non-representative of the balance of power. The challenge is, because there isn't a combination of an industrialist class that comes from a legitimate group (the idea of a legitimate group in Ethiopia might be problematic, because even the Oromia nationality might not necessarily be perceived as the legitimate group – itself a very complicated story), there are mounting frustrations from society or other political and ethnic groups that feel that large amount of resources are being directed at or within the circles of this illegitimate group.

For those who theorize about development from the mainstream point of view, that is highly prescriptive in its recommendations about the way in which industrialization should proceed, their 'failure-complex' manifests in the form of a vindication of the cautions of the theory against Ethiopia attempting the impossible. For some, who come into the analysis from a new political economy perspective, it was in the first place too optimistic to expect that Ethiopia's industrial emergence would, in part and to a large extent, be driven by the military due to the long history of poor performance by the military in Africa and across the globe. Whilst there is substance to the concerns of corruption and negative rent-seeking that are being expressed by previous work, there is, however, considerable exaggeration in the announced failure of METEC. The severity of the recent judgments on the performance of METEC coincides with the wishful thinking of some authors who would like to see changes in a corporation that is controlled by management from a particular ethnic group and whose ideological background aligns with what they see as the TPLF's apparently problematic Marxist ideologies.

Overall, the lack of inclusiveness and representation in METEC's story shows us how the process of state intervention in building industrial capabilities within both the state and private sector can and does typically attract the attention of different actors across state, society and capitalist classes who, to put it bluntly, are prone to start making a claim to their own slice of the cake. In other words, increased economic growth in Ethiopia is putting pressure on the state to allocate and distribute both distributional rents and industrial policy rents. The process of development has, however, given power to social forces within the EPRDF that have the

potential to undermine, contest and reconfigure the existing power relationships. What leaves much to be desired is that the desire to cut what is perceived to be a fast growing money pump into the Tigrayans, who make up only 6-8% of the population, is apparently being used by the new regime to seize upon market-centric ideas of development. There appears to be something else going on, namely an ethnic dimension that is blocking the vision of those now in power not to see or miss the point of the considerable learning (not without its own challenges) that has been happening in the Ethiopian complex industrial sector. Overall, there is still a strong indication that for Ethiopia to successfully move into a second or third stage of industrial policy and industrialization, the government not only has to push for structural transformation, but must address the contradictions of capital ownership and provide clarity on the role of domestic capital in Ethiopia's industrialization project.

Chapter 8
Conclusion

Through a focus on complex manufacturing activities in Ethiopia, this study has opened up the black box of industrial development and 'catch-up' in an aspirant African developmental state in its attempts to bring international expertise and local capital under a state umbrella to build and run a number of increasingly complex projects. This study and the knowledge gap it has sought to fill is important, because there is limited empirical evidence on the promotion of learning-by-doing in the building of domestic technological capabilities in advanced manufacturing, particularly in sub-Saharan Africa. The present study has moved closer in closing the gap in the limited understanding of learning and technological capability building in sub-Saharan Africa and the constraints that domestic firms face in pursuit of learning. It has also advanced an understanding of how governments in low-income African countries facilitate the development of complex manufacturing sectors and the degree to which they are, in practice, able attract to foreign investments around these sectors, generate broad-based linkages with other sectors, and unlock potential in areas where comparative advantage does not currently exist.

Oqubay (2015) and I share a common belief of the deep relevance for understanding the processes of economic development and transformation in developing countries as developed in the theories of Albert Hirschman, Alice Amsden and Mushtaq Khan. The theoretical contributions of these theorists have served as particularly powerful instruments with which we have sought to make sense of the process of transformation via the state in Ethiopia. This study focuses on a subsequent and recent period as well as on more complex industrial activities. Advanced activities were chosen in part of an attempt to build on Oqubay's (2015) work which is focused on simple sectors such as horticulture, leather and leather products and cement production. The developmental state paradigm makes emphasis on the need for a stronger push for the development of more advanced sectors due to increasing returns to scale and the learning potential embodied in these sectors, addressing balance of payments constraints, and the linkage effects that can arise from the development of capital equipment to be used in a number of manufacturing sectors and industrial projects.

As it turns out, the main challenge facing Ethiopia, much like other African countries, is that there isn't a wide range of pre-existing capitalist firms that already manufacture capital equipment competently. On the other hand, the frequent riots that have mainly targeted foreign investors' property over the last few years have been precipitated by perceptions that the government is providing substantial support to foreign investments, to the neglect of local people. One particular dimension that this study has sought to deepen is a reflection on the peculiar challenges associated with nurturing an indigenous capitalist base on the African continent. Indigenous capital matters, because of what the East Asian development experience reveals about the limitations of a strategy that relies heavily on foreign direct investment, more especially if it is not connected to the local economy. Over the last few decades, global value chain perspectives have dominated the study and practice of industrial policy and industrialization; advocating for local firms to continuously upgrade their competitive positions in easy export sectors as a way to align with the global production network strategies of multinational firms. The policy implication has been to shift away from 'old style' industrial policies that promote domestic national champions since the room for failure is perceived to be too big in import substitution industrialization (ISI). Learning based on ISI is, therefore, not considered nor are the reasons for failures of import substitution in many African countries well-understood.

The Metals and Engineering Corporation (METEC), which is the case-study under consideration, was established in 2010 as an object of official government strategy that seeks to prop up local manufacturing in advanced activities. The corporation is a big player and leader in the metals and engineering sector with three distinct features which include:

- It being a state-owned enterprise that is embedded in the military;
- It having autonomous management within the broader architecture of industrial policy and;
- It being a hub for joint ventures, technology partnerships and links with both domestic and foreign capital.

This study focused on METEC as a prism to look at the intersection between the state, foreign capital and the domestic private sector to answer the question of whether Ethiopia is a developmental state. Starting from the basic premise that developmental states are essentially about the generation of learning in domestic firms mainly through productive business-state-relationships, this thesis adopted METEC as a case-study with the intention of establishing whether there is any direct evidence of a link between Ethiopia's conception of a (self-proclaimed) developmental state and the state's adaptability in its industrial policy that as it targets and promotes domestic capital in complex industrial sectors. The main question, which the thesis sought to interrogate, was: to what extent does the emergence of a domestic industrialist class, through advanced industrial activities suggest that Ethiopia is developing in the direction of a developmental state?

The findings show METEC's emergence as rooted in the development of manufacturing capabilities by both the military and the state, especially since the 1980s. It became evident that Prime Minister Meles Zenawi and his regime understood very well that the emergence of a domestic industrial capacity is a crucial component of the process of economic development, and were aware that the failures of industrialization on the African continent have much to do with the absence of domestic industrialists. Meles Zenawi was also cognizant that the absence of domestic capitalist class of industrialists meant that the political momentum to supporting the state's industrial policy would fail, because such a class is needed to push the government in the direction of an accumulation path that prioritizes the build-up of domestic industrial capabilities, rather than strengthening the interests of merchant or finance capital and/or those of foreign investors. Meles Zenawi's vision for the Ethiopian developmental state was to make a break with the mistakes made by leading African post-independence statesmen, whose efforts at advancing technological change yielded limited outcomes.

The challenge for development for Ethiopia is that the private sector is still too weak and not yet poised to play a direct and leading role in bulky, risky and capital-intensive projects. Neither has the private sector shown readiness to invest in medium to high technology sectors, such as capital equipment and machinery, which would relieve the country from balance of payments pressures as well as position it for a medium-income country in the near future. Meles Zenawi's encounters with the extensive involvement of the military in industrial projects in East Asian

developmental states, from which he drew inspiration, further cemented the idea of using the engineering capabilities of engineers and a managerial group in the military that are mostly rooted in the manufacturing experience of the communist regime to foster emergence of advanced industrial activities and build an Ethiopian developmental state that is technologically independent. The development of key Ethiopian mega-projects that has been underway over the last decade, including the Grand Ethiopian Renaissance Dam (GERD), the Yayu Fertilizer Complex and several sugar projects, and METEC's central role in them can, therefore, be viewed in light of the developmental state vision of industrializing Ethiopia. The mega-projects were, by deliberate design, intricately tied to the government's desire to harness the potential of the private sector by using elements of them as learning ground for the latter.

It was found that METEC has entered into a complex layer of relationships with foreign companies from different parts of the world as either technological partners or as contractors in various combinations of contracts and agreements as part of its technology transfer and technological absorption strategy. The corporation's management has generally been reluctant to opening up its processes to outsiders, mainly because of the perceived risk of political problems that come with bringing in foreign partners, as suggested, for instance, by the cautious and strategic approach in choosing foreign partners for the Grand Renaissance Dam (GERD). Due to an insufficiency in investment capabilities, however, METEC's technology selection strategy for expansion, diversification and joint-projects was at first not always well-informed and targeted.

Instead, it shows signs of having occurred on a piecemeal and haphazard manner, which has often led to an inappropriate choice of technology partners or technologies. This has led to redundancies, inefficiencies or stagnation in the progress of projects as the purchased technologies had to be reconfigured for purpose or technologies that are a right fit had to be newly sought. Over time and with experience, however, there has been some improvement in certain areas such as power equipment-related technologies. The learning outcomes, have therefore, been uneven between different METEC subsidiaries, where subsidiaries like Hibret Machine and Machine Building Industry and Ethiopia Power Engineering Industry have tended to perform relatively better than other METEC subsidiaries. The high degree of autonomy among each of METEC's subsidiaries has also hindered the ability of the corporation to reproduce firm learning across the different areas of focus within METEC.

Foreign firms and contractors have been assigned to handle the more complex aspects of projects or production. Where METEC believed that it had the requisite capacity to handle certain elements, it did so under the supervision of experience foreign firms or in joint production of certain goods. Whilst METEC has been able to learn under these arrangements, there have been clashes with foreign capital that have, for instance, revolved around METEC's inability to adapt quickly to learning as evidence by some weaknesses in quality and slow progress in supplying the components that it is responsible for manufacturing or fitting in projects. Certain elements of projects that had been assigned to METEC proved to be too complex to handle, yet the corporation did not seek out solutions within a reasonable timeframe for production or the projects to resume with swiftness.

METEC's portfolio has expanded and diversified since establishment. The diversification is commensurate with growth in capital, size, employment, skills and engineering knowledge and capacity. Some of the corporation's own project execution capabilities that have been developed over time have been useful in the expansion of its own plants as well as that of some external clients. Some of METEC's subsidiary plants have, however, not undergone much technological deepening despite growing their capabilities for assembling imported components. There is room for more localization in areas like the automotive business, where opportunities for spare parts production exist and could serve as a springboard for the development of a component supplier base. The power equipment sub-sector, has, on the other hand, shown considerable progress by achieving import replacement in transformers, rail-line equipment, electric-equipment and some power tools. Issues of quality and durability, however, still remain.

Many of the projects in which METEC has been involved in have experienced delays, cost-overruns, quality issues, and the commercialization of many products never did materialized. Many of the relative failures stem from insufficient capacity and experience in innovation, project execution, marketing and production capabilities in the initial stages and a difficulty to scale up, master advanced technologies and adapt. The complexity of the projects was at times overwhelming for inexperienced domestic private sector firms. Furthermore, the mega-projects were disconnected from a realistic analysis of what was feasible with respect to timelines, budgeting and available skills. When these accompanying challenges in the learning process are assessed through a comparison with Ethiopian mega-projects of similar scale that have been led

by foreign capital they are not so much dramatic displays of failures as purported since similar issues have been experienced too in those projects. All of these problems and setbacks are seen by METEC as an ordinary part of teething issues that occur during the early stages of learning. Even in the midst of the delays, METEC has claimed victory and learning in a number of areas, including the electricity upgrades at both the GERD and Yayu Fertilizer Complex. For certain people within the state, evidences of failure, do not necessarily demonstrate that METEC is or has been a useless entity, but are a demonstration of the complex nature and enormous amount of learning that needs to happen to make a project work with domestic elements.

Relative to examples of older mega-projects on the continent such as the bauxite plant in Guinea, the Tanzanian fertilizer plant as well as contemporary projects such the Medupi Power Station in South Africa and the Inga Dam in the Democratic Republic of Congo that have suffered huge setbacks, the comparison of METEC to these in relation to delays, cost-overruns, and quality issues, gives a strong indication that Ethiopia's grand-scale projects are far from being a case of dramatic failure. Comparably, Ethiopia fairs favourably considering the hands-off approach in these other comparator projects that have prioritized the heavy-handed involvement of external forces, much to the neglect of dynamic internal policy processes that are known for their potential to foster learning and state capacity building. The magnitude of responsibility that METEC was tasked with makes for an impossible mandate, even by the standards of comparable developing countries on the continent. Yet, the developmental attitude of the state is still a remarkably encouraging sight. While an attempt to quantify the developmentalism that has informed the METEC experience is difficult to carry out, the qualitative extent to which it has been important in the translation of Ethiopian over-optimism into swift developmental decisions cannot be under-estimated.

With respect to linkages between METEC and domestic firms, METEC has been instrumental in directing local investment into manufacturing. The evidence suggests that a portion of firms have gained experience from working on various METEC projects or supplying inputs. They have, as a result upgraded their operations and capabilities by investing in technologies and processes that were previously not available to Ethiopia in response the sub-contracting opportunities becoming available in the various projects. Some have even gained enough experience to have upgraded their licenses and have become more involved in other complex elements of other infrastructural

and industrial projects such as roads, railways, industrial parks, etc. that being awarded by the government or the private sector. METEC has managed to stimulate the interests of domestic capital in sector where there is otherwise an aversion to investing into technological capabilities due to complexity, risk and the temptation to look to easier sources of accumulation even within the sector.

Through METEC, domestic companies have also been afforded the opportunities to be involved in design, supervision and consultancy aspects where previously they were excluded from these. Learning for some private sector firm, has progressed to the level where they appear to have surpassed METEC in the competent production of certain goods. The private sector feels that the role of METEC should be gradually fading as they become more competent, but METEC is still focused on being the main producer or acting as a middleman between clients and the private sector. This, according to the private sector stymies innovation and crowds it out. Overall, however, there is little evidence to suggest that private sector interests would have been prioritized as much as they are without METEC's leading role. It is, however, also true that METEC's political alliances have enabled the corporation to protect and perpetuate learning rents even in areas where it where it was evident that it should not have had the continued access to these rents. METEC's troubled relationship with the private sector underscore the difficulties of METEC in emerging as an autonomous actor in the production of a new capitalist class in Ethiopia. While the Meles state tried to starve the private sector of resources in attempts to develop its own 'state-led private sector', the analysis shows the limits of this approach in building a developmental state. Developmental state literature (Amsden, 1989, 2001, 2008; Johnson, 1982; Wade, 1990) emphasizes how states worked along the private sector in forging consensus on industrial policy, but it appears in the case of Ethiopia that the state controlled by a minority ethnic group desperately struggled to create its own industrial class without making any compromises with the existing private sector.

In so far as METEC's linkages with innovative start-ups are concerned, it is framed around a husbandry function. While a number of collaboration opportunities have been extended to the domestic private sector for prototype development, the kind of institutional mechanisms that would result in better innovation, product development and commercialization are not coherently connected. METEC, research institutes, industry institutes, skills and enterprise development

programmes and the support functions of various ministries work in isolation and, therefore, any attempts at promoting industry-university linkages and innovation are either half-hearted or do not have the kind of financial backing that would make them successful. There is also an element of mistrust between the METEC and the private sector that constrains the development of a more productive relationship. The progression of learning, it seems, depends on a relationship of trust both within the party-state between political and military elites and between METEC and the private sector. The legacy of communism, the securitization of development and fractious relations between the state and the private sector that remain unresolved are adverse to attempts at creating linkages since METEC cannot trust the private sector with certain projects that are deemed of national security interest.

Recently, however, there have been emerging patterns of a fairly progressive dynamic in state-business relationship in the steel sub-sector, which has strong supplier linkages to METEC. Capitalists in the steel sector appear to be keen on working with the government to establish circuits of accumulation that also benefit the state's developmental objectives. The state's relationship with steel manufacturers is slowly evolving from ad-hoc and piecemeal interventions of reacting to problems as and when they arise to a much more reciprocal and productive relationship over time. In addition, the instruments experimented with in the sub-sector, such as domestic content requirements, tariffs and subsidies and other sector-specific interventions could form the basis for experimentation with industrial policy on a larger scale in the metals and engineering sector as a whole. Through a reciprocal relationship with these capitalists the government is reaping the rewards of policy learning; it is becoming more adaptive and responsive to the proactive demands of domestic capital. This is in strong contrast to another group of rentier entrepreneurs within the steel sub-sector that consists of retailers and importers whose characteristic remains fairly backward. That group is tirelessly engaged in growth-reducing forms of rent-seeking, speculation and seeking out opportunities for accumulation without making real investments. The government, however, appears to be relatively successful in frustrating its ambitions, which often run contrary to the interests of steel manufacturers.

When looking at METEC's relationship with the state, it strongly constituted a growth-enhancing arrangement in immediate years after establishment and when it had a direct reporting

line to Prime Minister Meles Zenawi. Meles had designed METEC to be a highly autonomous structure with only a few strategic channels of enforcement and accountability. Such a deliberate insulation was undergirded by the logic that innovation, risk-taking and freedom that was necessary for national champions in developmental states to experiment in the process of learning would go on undisturbed and free from political interference. The problem, however, is that the top-down decision-making under the authoritarian Meles regime was not wedded to the principle of "reciprocity". On the other hand, authoritarian regimes is East Asia with effective control mechanisms on capitalist groups could get away with it because they were based in culturally-disciplined and homogenous socioeconomic environments. In the Ethiopian case, a temporarily dominant minority, the Tigrayans, was engineering a development framework that had only tenuous links to the broader fragmented society.

Subsequent to the death of Meles, the growing alienation of METEC to the broader industrial policy framework became more visibly pronounced. The corporation's operations, which now seemed to be outside the realm of control of the people who now controlled government and the governance of industrial policy, was never re-visited by his successor. This reveals a weakness in the state's adaptive capabilities in re-imagining the configuration of the METEC structure in light of the changing balance of power between the state and METEC. The boundaries that have existed between METEC and the state have limited the state's ability to leverage the tools of industrial policy more effectively and, thereby, transplant the learnings derived from other sectors or government projects into METEC. The personalization of power under Meles and his inability to build an economic miracle that would outlive him is, therefore, a cautionary tale on the pitfalls of African developmental states.

This problem of a lack of transplantation of learning speaks also to the broader and particular challenge faced by the metals and engineering directorate of the Ministry of Industry due to the metals and engineering sector generally exhibiting much more technological complexity, fragmentation and heterogeneity in activities of the different sub-sectors than other manufacturing sectors. The metals and engineering sector also generally does not share similar traits with other more low-technology manufacturing sectors in terms of technological content, organizational capabilities, industry structure and dynamics as well as the channels through

which technological innovation takes place. All of this makes it no easy feat for policymakers to transplant learnings between sectors.

While the government was in full support of METEC's learning mandate, the uncertainty of organizational capabilities faced by the corporation was misunderstood and there was a serious lack of clarity around how different levels (micro, meso and macro) of policymaking should be articulated in relation to learning. The articulation of policy between METEC and key government institutions for the promotion of the metals and engineering sector like the Ministry of Industry, the Metals Industry Development Institute, Ministry of Science and Technology, among other ministries and agencies, was, thus, limited. METEC's technological development strategy, therefore, lacked the kind of stakeholder engagement required for a project of its kind to succeed. Overall, the grand vision of the government in relation to METEC tells us that METEC could, by far, very well have been the most important industrial policy project, yet its project management was peripheral to the country's formal industrial policy. As a result, there is a weakness in the reciprocity principle that leads to the state not being able to monitor or discipline METEC effectively.

The evident oversight on the part of the government with respect to various mega-projects suggests a weakness in reciprocal control mechanisms. Disciplining the METEC's management outside of Meles Zenawi's control proved to be a complicated task for the state. There is also the wide-spread recognition that parliament has co-liability for not exercising its vigilance with METEC over the progress of various mega-projects. However, considering parliament's unfamiliarity with the bureaucratic and interventionist protocols of a typical rents management framework, it is not surprising that it was unable to exert a proper oversight role over METEC. To expect parliament to be the enforcer of reciprocal control mechanisms (RCMs) does not find echoes of expression, for example, in the developmental states such as Japan or Taiwan where the enforcement of RCMs was accepted to be in the jurisdiction of strong bureaucratic state institutions or coordinating forums such as the Ministry of International Trade and Industry (MITI) in Japan or the Industrial Development Bureau (IDB) in Taiwan.

The Ethiopian Ministry of Industry seems like a likely candidate to play the role of monitoring METEC's performance and make the necessary recommendations for the government to discipline non-performance. In this case, however, the distant and superficial relationship

between METEC and the Ministry of Industry disempowered the latter due to the operations of METEC falling outside the realm of the former's most important role of designing, implementing, monitoring and coordinating the nations' industrial policy. In the original setting up of METEC, the state appears to have followed the kind of logic that deliberately sought to create an environment of autonomy for the corporation in order to give it room and allowance to experiment and engage in trial-and-error learning exercises, especially in matters relating to technological capability development. This came mainly from the recognition that multiple governance channels may, intentionally or unintentionally, have the effect of diluting the independence of firm managers in decision-making.

Had the MOI been much more hands on with METEC, for instance, it could have potentially monitored the corporation's activities with a bit more closeness, considering the MOI had already had some experience learning how to govern the industrial policy in relation to sectors such as horticulture or leather and leather products. Although much of the policy learning that had been gained by the state in the latter sectors was not robust, it had points towards a general direction of improvement in the governance of industrial policy (Oqubay, 2015). However, due to sectorial boundaries emanating from METEC's autonomous function, the possibility for cross-fertilization of learning in the governance of industrial policy from these relatively easier sectors into the more complex industrial activities under METEC's purview has been limited. Effectively, the absence of a governance agency responsible for instituting credible threats of discipline, compulsion mechanisms or enforcement of performance conditions aided the creation of perverse incentives for satisficing behaviour to set in in.

This weakness of RCMs confirms the broader weakness of industrial policy governance in Ethiopia that Oqubay (2015) observed in relation to the leather and leather products sector in his research. My findings are also in alignment with Khan's (2016) reservations about the Ethiopian government's ability to enforce credible compulsions where, in relation to the textiles and garments sector, he observed an incompatibility of the instruments being applied with the nature of Ethiopian capital. There is still some room, however, for the generally constrained relationship between the state and METEC as well as the secondary relationship between METEC and the private sector to be reconfigured from the arms-length form it currently takes to transform into a

more productive one. This possibility is demonstrated by the state's relationship with party-owned firms, which have often been demonized by international finance institutions, donor corporations and the media for being anti-competitive, which somewhat shows that the targeted project of promoting indigenous capitalists with a developmentalist class character using some forms of reciprocity is within the reach of the state. Some of the party-owned firms have been shown to play a significant role in the development of risky and capital-intensive sectors, thus building domestic capabilities in combination with the state and FDI (Oqubay, 2015). Mesfin Industrial Engineering (MIE), for instance, was a first-mover in the metals and engineering sector and has been spearheading the much needed manufacturing in more complex activities even before METEC came to the scene whilst being surrounded by rentier capitalists with short-termist views of accumulation.

METEC is an 'animal' that can be analyzed from multiple directions. For some, it demonstrates the folly of a low-income country undertaking production in technologically complex sectors and mega projects that are beyond their existing capabilities. For others, the METEC case demonstrates how the co-option of 'self-interested' military elites into the political elite bargain can result into an elaborate and well-orchestrated scheme of corruption, leading to the capture of public resources and sell out on a developmental dream. As such, what tends to get mentioned the most about METEC, either in journalistic media or academic literature, are the failures that it is associated with. Yet, there is a bigger lesson that can be learnt from the METEC story other than what currently dominates the narratives in media and academic discourse.

When looked at from the angle of learning, the disappointing results of METEC need to be viewed as part and parcel of a bigger challenge; the complexity of developing advanced industrial sectors in a least income country, which by definition have processes that are far more complicated with respect to the design, enforcement and regulation of RCMs. To prod entrepreneurs in areas that are relatively easier sources of accumulation is a lot easier to do through, for instance, the allocation of shares in banks or mines or construction permits and licenses for the development of real estate. It is, however, a lot more difficult to develop an industrialist class in advanced manufacturing because it comes with the application of RCMs, which are no easy feat to design or apply. For relatively powerful and politically-connected firms like METEC, which have a lot of incentives to engage in satisficing behavior, the state needs to

invest into deepening state capacity to design, implement and enforce strong RCMs at the level of formal and institutional industrial policymaking. It is also important for there to be strong incentives and reciprocity at the informal level of the political networks that connect politically powerful firms and ruling elites that would nudge such firms to put more effort in using their rents to learn and engage less in growth-reducing forms of rent-seeking.

METEC currently finds itself in crisis and the dominant narrative of disastrous failure in relation to the corporation seeks to bring legitimacy to the prevailing argument that the METEC experience was a short-lived illusion. In the eyes of many it has the appearance of a lame-duck and the dominant opinion is that military elites have run the corporation into the ground by leveraging their political role in order to make money by promoting a range of slack of investments. For most observers, in media and academic literature alike, the mere fact that Ethiopia's most lucrative mega-projects are being undertaken by the military is to be viewed with suspicion. From this perspective, METEC symbolizes neopatrimonialism and the anti-developmental state in the context of Ethiopia. The corporation now faces an ousting by Prime Minister Abiy Ahmed and his regime, whose main justification for the ousting is that Ethiopia needed to deal decisively with the corruption that was made possible by the power embodied in the TPLF.

The ostracizing of METEC has coincided with less emphasis on the developmental state narrative and has had the effect of reducing the role of domestic capital at the center of Ethiopian mega-projects. New bargains are being made with international capital for the completion of mega-projects in replacement of METEC and the government is flirting with a market-centric approach that relies majorly on external expertise for policy advice. The brutal withdrawal of METEC is particularly concerning since there appears to be no clear strategy of harnessing the private sector and very few conditions are likely to be attached to force international contractors to operate as developmental partners. Attempts by the TPLF to silence the sirens of neoliberalism in Ethiopian economic policy are generally being interpreted by many as a desperate attempt to keep their hands in the cookie jar.

It is also clear that the ousting of METEC has had strong elements of a broader reluctance to fully empower certain groups economically, which would in effect turn any one group into the de facto heavy weights of the Ethiopian economy. This latest turn of affairs in Ethiopian politics,

particularly as it is connected to exit of the TPLF from the EPRDF coalition and increased assertiveness of the other parties in the erstwhile coalition, somewhat represents what could be considered as a legitimate attempt to reconfigure the balance of powers in Ethiopian politics, which for a long time largely promoted the capitalist interests of a minority ethnic group, the Tigrayans. The move, however, has the potential to unwittingly invite the curse faced by many other African countries such as Tanzania where the plug was pulled on Asian minority entrepreneurs in the 1960s due to contentions in the political system that ultimately did not allow for the procession of something that could have been developmental to emerge. The interesting question for Ethiopia is that while there was progress toward a developmental state, as illustrated by METEC, this experiment was not sustainable precisely because it failed to acknowledge the multiethnic character of Ethiopia.

The key lesson, therefore, to be learnt from Ethiopia by students of developmentalism, policymakers and politicians circles back to the alternative literature on "democratic developmental states" (Edigheji, 2005, 2010; Mkandawire, 2001; White, 1995, 1998) that claims that the problems countries such as Ethiopia have faced in building enduring forms of developmentalism stem from failure to acknowledge the significance of participation and reciprocities in the development equation. The work of scholars such as Haggard (2015) and Öniş (1991) not only warns of the difficulties of replicating the East Asian developmental models in other cultural contexts, but also highlight some of the pertinent questions that warrant further investigation in relation to the Ethiopian case or other African contexts such as: how do you erect a developmental state on a fragmented national context? Can minority groups author developmental states and how sustainable can these experiments be in the absence of excessive use of force?

Overall, the findings suggest that Ethiopia has, over the last three decades, been edging close to being a roaring African lion with the potential to resemble an East Asian tiger. The METEC experience, however, reawakens Mkandawire's (2001) argument that developmental states are not always about the certainty success, but that the state should always aim to learn even from failures and understand that learning works in different ways. The Ethiopian state still appears to be an exemplary 21st century case of bridging the continental-wide gap in African indigenous productive capitalists by using state-owned enterprises, military-owned enterprises, party-owned

firms, and strategic links and joint ventures with foreign investors to create space for the development of potential national champions in various ways by making use of old-style industrial policies. Through the use of state-owned enterprises and state-ownership, the state in Ethiopia has been playing an activist and developmental role beyond a servant 'facilitating' actor that is waiting for the private sector to 'discover' comparative advantages. In this regard, the state has been showing strong intention to develop technological capabilities and create dynamic inter-industry linkages.

It is important, however, to note that Ethiopia is currently firmly back into civil war as the Tigrayans have taken up arms against the Abiy government. For this reason, the developmental state appears to be dying. While it may be too early to say what the impact will be on the developmental and localization effects, the 'Abiy approach', rather than finding creative and innovative policy solutions, appears to be slowing down the momentum of domestic learning-by-doing that has been initiated in and via METEC. On the other hand, the lessons of building an indigenous manufacturing sector may very well endure. However, there is also the possibility of a closure in the avenues for the state to, in future, harness the learning that has been generated, particularly as it related to its ability to replicate the developmental state 'over-optimism' that has been associated with METEC developmentalism if the policy pendulum swings too much in the direction of neoliberalism. Ultimately, whether or not that learning continues and the mistakes of the past are corrects, will depend on the re-emergence of interest groups from different sections of the state, ruling party or what is now the opposition to push for the advancement of domestic industrial interests. These new political economy developments need to be studied further to ascertain whether the Ethiopian developmental state project will falter or survive.

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APPENDIX 1: ONE OF RESEARCH PERMISSION LETTER FROM METEC

የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ
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The Federal Democratic Republic of Ethiopia
Metals & Engineering Corporation

ቁጥር/ብኢኮ/2/
Ref. No
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Date

ለአዳማ እርሻ መሳሪያዎች ኢንዳስትሪ

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ቢያቡበት፤

ጉዳዩ ፡-መረጃ መስጠትን ይመለከታል፤

በደቡብ አፍሪካ ጆሃንስበርግ ዮኒቨርሲቲ (Witwatersrand Johannesburg) የኒቨርሲቲ በዲቬሎፕመንት ቲኦሪ እና ፖሊሲ የጾከተራል ዲግሪ ተማሪ የሆነው ሲቡሳላ ንኩንዚ The Ethiopian Developmentale state seen through the prism of the development of aDomestic Industrialist clases The Metals, Machinery, Equipment and Engineering sectors in Ethiopia በሚል ርዕስ የመመረቂያ ፅሑፉን ለመስራት ተጽማቹንን የመረጠ ሲሆን፣ ሚስጢራዊ የሆኑና ሚስጢራዊ ተብለው የሚገመቱ መረጃዎችን እንዳይወጡ ጥንቃቄ በማድረግ ለጥናቱ አስፈላጊ የሆኑትን መረጃዎች በመስጠት እንድትተባበሩት በመጠየቅ ጥያቄውን ለኮርፖሬሽኑ ያቀረቡትን ደብዳቤ ኮፒ እንድ ዝፅ አባሪ አድርገን የላክን መሆኑን እንገልፃለን፡፡

<< ከሠላምታ ጋር >>

ጸሐለ ገ/ሚካኤል
(ሻሌቃ)
ዋና ስኳርኮሚሽንና አቅም ግንባታ ማህበል
ዋሥራ አስኪያጅ

እንዲያውቁት፡-

➢ ለዋና ዳይሬክተር

ግልባጭ ፡-

➢ ለፋይል
ብኢኮ/ስ/

APPENDIX: TWO – RESEARCH PERMISSION LETTER FROM ETHIOPIAN MINISTRY OF TRADE AND INDUSTRY

የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ
የኢንዱስትሪ ሚኒስቴር
The Federal Democratic Republic of Ethiopia
Ministry of Industry

ቀን 15 ህዳር 2010
Date
ቁጥር ወ/ኢ/አ/21
Ref.No

ለብረታ ብረት ኢንዱስትሪ ልማት ኢንስቲትዩት

አዲስ አበባ

ጉዳዩ፡- ድጋፍ ማድረግን ይመለከታል፤

Mr. SIBULELE NKUNZI የዊትዋተርስራንድ ዩኒቨርሲቲ የዶክትሬት ተማሪ ሲሆኑ "The Ethiopian Developmental state seen through the prism of the development of a Domestic Industrial Class: The case of the Metals, Machinery, Equipment and Engineering sectors in Ethiopia." በሚል አርእስት ለሚያከናውኑት ጥናት የሚያስፈልጋቸውን መረጃ ለማግኘት እንዲችሉ ድጋፍ እንድናደርግ እ.ኤ.አ. ኖቬምበር 23 ቀን 2017 በተፃፈ ደብዳቤ ሚኒስቴር መስሪያ ቤታችንን ጠይቀዋል።

ስለሆነም በእናንተ በኩል አስፈላጊውን እንድትተባበሯቸው ከዩኒቨርስቲያቸው ያመጡትን ደብዳቤ ሁለት ገፅ አያይዘን ልከንላችኋል።

ከሰላምታ ጋር

አባሪ፡- 2 ገፅ

ግልባጭ፡-

ለ Mr SIBULELE NKUNZI

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0115 540286
0115 534969
አዲስ አበባ - ኢትዮጵያ
Addis Ababa-Ethiopia

APPENDIX 3 – RESEARCH PERMISSION LETTER FROM THE METALS INDUSTRY DEVELOPMENT INSTITUTE



የኢትዮጵያ ፌዴራላዊ ዴሞክራሲያዊ ሪፐብሊክ
የብረታ ብረት ኢንዱስትሪ ልማት ኢንስቲትዩት
(ብ.ብ.ኢ.ል.ኢ)

The Federal Democratic Republic of Ethiopia
Metals Industry Development Institute
(MIDI)

ቁጥር/Ref.No: 01/14/406/3-443
ቀን/Date: 15 AUG 2017

Mr Sibulele Nkunzi
Faculty of Commerce, Law and Management
Private Bag 3
Wits
2050

Dear Mr. Sibulele Nkunzi
RE: Permission to conduct PhD Research

The Metals Industry Development Institute (MIDI) acknowledges your letter dated 02 August 2017, and we are pleased to confirm that your request to conduct research with MIDI and the companies supported by and affiliated to MIDI has been granted. Mr. Ashenafi Waldeyesus has been recommended as the official who will facilitate access to information in support of your research towards a Doctor of Commerce in Development Theory and Policy at the University of the Witwatersrand.

While undertaking research, the following terms and conditions may apply:

- You are expected to follow reasonable instructions in relation to the terms of the right of access;
- Ensure all information you have gathered remains secure and confidential within reasonable terms;
- Ensure that you comply with the requirements of the MIDI code of conduct, act appropriately, responsibly and professionally at all times;
- That you submit a copy of your research report once it has been submitted and published.

Yours sincerely,

Workneh Desalegn
Director General

Please contact Mr. Ashenafi Waldeyesus for further information. His contact details are:
E-mail- ashesjimys@gmail.com
Phone-+251913235264
Addis Ababa
Ethiopia