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THE IMPACTS OF QUASI TAXES FROM MINING ON ECONOMIC GROWTH IN SOUTH AFRICA

Musa Miyambu

A research report submitted to the Faculty of Engineering and Built Environment, University of the Witwatersrand, in fulfilment of the requirements for the degree of Master of Science in Engineering specialising in Mineral Economics

Johannesburg, 2018

DECLARATION

I declare that this research report is my own, unaided work. It is being submitted for the Degree of Master of Science in Engineering specialising in Mineral Economics at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.

…….

Musa Miyambu

19 October 2018

ABSTRACT

South Africa‘s economic growth has been declining since 2009. Mining contributes to economic growth in various ways, including foreign earnings and taxes. It contributes to the economy through direct, indirect and quasi taxes. Quasi taxes are near taxes that are imposed on mining projects in the national interests of protecting the environment and the social, cultural and economic needs of local communities. They have implications on tax design, they are often significant and are regulated by various Acts. They include contribution to local communities, foreign exchange control, environmental taxes, performance bonds and government equity in mining projects. Because of their implication on tax design and related aspects, the research was conducted to assess the extent which they contribute to the economic growth of South Africa, to assess how the country can enhance the effectiveness of quasi taxes on economic growth, to assess whether the country has a good mining tax regime, to assess their impact on mining investments decisions and planning. The research involved a literature survey for qualitative and quantitative data from various sources. These were various books, journals and others publications. It used an internet-based method of data collection and hard copies from various institutions, including libraries.

Annual reports of three mining companies that are mining in South Africa and are listed on the Johannesburg Stock Exchange, were randomly sampled and assessed, to gain an understanding of the manner in which these taxes contribute to economic growth. The work also used a Discounted Cash Flow model to assess the impacts of quasi taxes on mine planning and mine investments. It further assessed the extent to which quasi taxes can be applied to the determinants of economic growth. The findings are that quasi taxes contributed 0,77 percent (%) in terms of mining exports earnings per unit of GDP created, between the years 2007 to 2016 and R2 billion to community development in the year 2015. It was found that transparency and lack of clarity are some of the impediments to the contribution of quasi taxes to economic growth. A good mining tax regime is required in order to reap maximum benefit from these taxes. The country must also use Community Engagement Plans to manage expectations, to explain the level of benefit from mining, for clarity and transparency between interested and affected parties. Quasi taxes affect mine planning and investment decisions. Quasi taxes must also be used for clustered and sustainable projects in the form of the Public Private Partnership approach, in line with the determinants of economic growth.

In memory of my parents:

Mr. Magezi Ben Miyambu and Mrs. Dangisani Doris Miyambu

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I would like to thank God Almighty for good health during the study.

I would like to convey my gratitude to Professor Hudson Mtegha, who was my supervisor, for his tireless guidance, patience and the excellent learning experience he has provided during the study.

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LIST OF ACRONYMS AND ABBREVIATIONS

ADPA	Association of African Diamond Producing Countries
AGOA	African Growth and Opportunity Act
BEE	Black Economic Empowerment
BERD	Business expenditure on research and development
Brexit	Britain exiting the European Union
CDA	Community Development Agreements
CEPs	Community Engagement Plans
CSI	Corporate social investment
CSR	corporate social responsibility
DCF	Discounted cash flow
DMR	Department of Mineral Resources
ECOWAS	Economic Community of West African States
EER	Effective Exchange Rate
EMPR	Environmental Management Programme
EMS	Environmental Management System
EKC	Environmental Kuznets curve
EITI	Extractive Industries Transparency Initiative
ESOP	Employee Stock Ownership Plan
FCCC	Framework Convention on Climate Change
FX	Foreign currency
GDP	Gross domestic product
GFCF	Gross fixed capital formation
GHG	Greenhouse gases
GNP	Gross national product
GVA	Gross value added
G20	Group of twenty governments and central bank governors
HDSA	Historically Disadvantaged South Africans
FDI	Foreign Direct Investment

Forex	Foreign exchange
I&APs	Interested and affected parties
ICMM	International Council on Mining and Metals
IDP	Integrated Development Plan
IRR	Internal Rate of Return
LC	Local currency
LED	Local economic development
MIGDETT	Mining Industry Growth, Development and Employment Task Team
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MWP	Mining Work Programme
NEPAD	New Partnership for Africa's Development
NGP	New Growth Path
NDP	National Development Plan
NNP	Net National Product
NPV	Net Present Value
NSONR	National Sovereignty Over Natural Resources
RER	Real Exchange Rate
Rom	Run of Mine
SARS	South African Revenue Services
SIC	Standard Industrial Classification
SIPs	Strategic Integrated Projects
SLP	Social and Labour Plan
SACU	Southern African Customs Union
SADC	Southern African Development Community
TTIP	Transatlantic Trade and Investment Partnership
TPP	Trans-Pacific Partnership
UEMOA	Union Economique et Monetaire Ouest Africaine
UNEP	United Nations Environmental Programme
WAMSSA	West Africa Mineral Sector Strategic Assessment
WTO	World Trade Organisation

ZAR	South African Rand

1. INTRODUCTION

1.1 Background

Since 2009, South Africa has been experiencing slow economic growth compared to its growth from 2004 to 2008. The country has accordingly been deteriorating in terms of its long-term sovereign rating. These ratings, applied by ratings agencies, have also contributed to its low economic growth, since low ratings reduce the chances of the country gaining assistance from financial institutions.

During the conception of this study, the country's long-term sovereign rating in terms of both local currency rating and foreign currency debt has been deteriorating. Concomitantly, the balance in the country's current account has also been deteriorating and the main findings by rating agencies have been weighed down by low trend growth, sizeable government debt, contingent liabilities and deteriorating governance standards (Business Tech 2017). For the country to perform and increase its economic growth, it must improve in relation to various determinants of economic growth in all spheres and sectors – including mining. The mining sector can contribute to economic growth in various ways, including quasi taxes from mining. This underlines the significance of this research, which attempts to establish the extent to which quasi taxes have thus far contributed to economic growth, as well as how these taxes can better contribute to growth in South Africa.

In 2016, the average world economic growth rate stood at 3 per cent, having risen from 1.6 percent previously (World Bank Group, 2017). In the same year, the South African population growth rate stood at 1.6 percent compared to 0.3 percent growth in real Gross Domestic Product (GDP) (South African Reserve Bank, 2016). In view of the discrepancy between population growth and growth in GDP, there will be scarcity of resources in the long term. Mining has been considered a direct cornerstone of GDP growth through taxes, foreign exchange earnings, job creation, and other factors. Although South Africa has a greater share of regional GDP in comparison to other Southern African Development Community (SADC) countries at 55.5 percent (followed by Angola), the country has regressed from 63 percent in 2010. Moreover, South Africa has experienced lower economic growth compared to its peers in the SADC region, with an average growth rate of approximately 2 percent, as illustrated in Figure 1.1 and Table 1.1: Regional GDP country share in SADC, 2013

Table 1.1: Regional GDP country share in SADC, 2013

Country	Share to the SADC 's GDP
Zambia	3.9
Zimbabwe	2.0
Tanzania	7.1
Swazilland	0.7
Seychelles	0.2
South Africa	55.5
Angola	13.6
Botswana	2.7
Lesotho	0.4
Madagascar	2.7
Malawi	1.1
Mauritius	1.9
Mozambique	2.3
Namibia	1.9
DRC	4.2

Source: South African Institute of International Affairs (SAIIA), 2014

The country has therefore regressed in terms of its regional GDP country share in the SADC region.

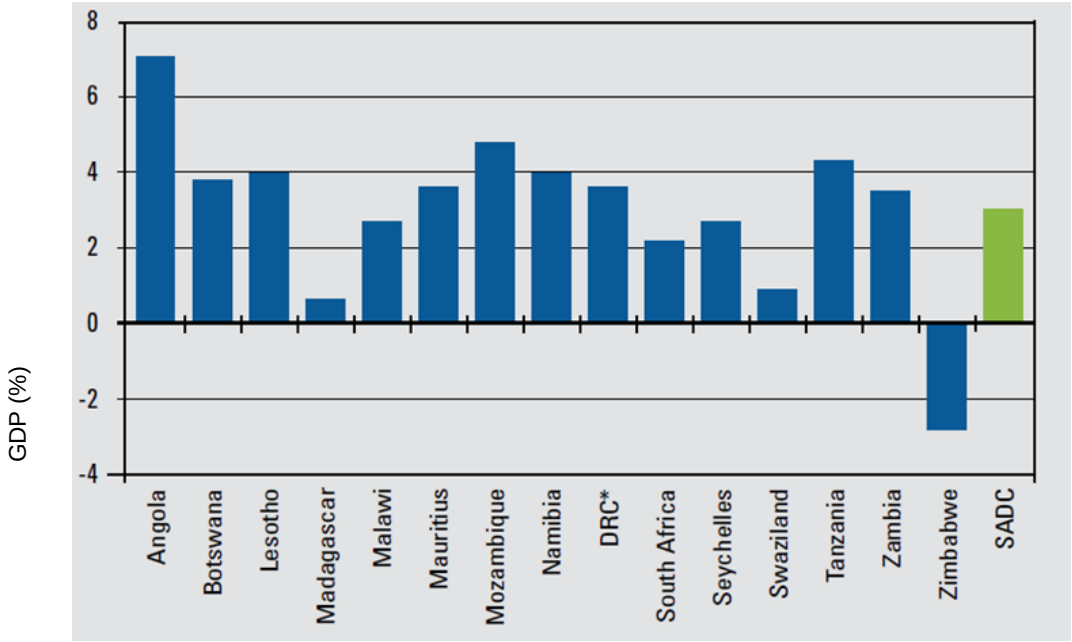


Figure 1.1: GDP growth per capita of SADC countries from 2003 to 2013

Source: South African Institute of International Affairs (SAIIA), 2014

From Figure 1.1 it is observed that Angola has enjoyed more than 7 percent GDP growth per capita annually over the last decade, while the per capita income of a country such as Zimbabwe decreased by 2,8 percent annually over the same period. South Africa shows relatively lower economic growth compared to its peers in sub-Saharan Africa. This is illustrated in Table 1.2.

Table 1.2: Sub-Saharan Africa: Real GDP growth (percentage)

	2008 to 2004	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sub- Saharan Africa	**6.6**	**3.9**	**7.0**	**5.1**	**4.4**	**5.3**	**5.1**	**3.4**	**1.4**	**2.6**	**3.4**
Oil -exporting countries	8.6	6.7	9.2	4.7	3.9	5.7	5.9	2.5	- 1.5	0.8	1.8
Nigeria	7.7	8.4	11.3	4.9	4.3	5.4	6.3	2.7	- 1.6	0.8	1.9
Middle -income countries	6.6	3.6	6.9	4.5	2.2	4.8	4.6	2.7	0.4	1.8	2.6
South Africa	4.8	- 1.5	3.0	3.3	2.2	2.5	1.7	1.3	0.3	0.7	1.1
Low -income countries	6.3	5.1	7.4	7.1	4.7	7.3	6.7	5.7	4.4	5.3	5.7
World economic growth	**4.9**	**- 0.1**	**5.4**	**4.3**	**3.5**	**3.5**	**3.6**	**3.4**	**3.2**	**3.6**	**3.7**
Sub -Saharan Africa, other -resource -intesive countries	4.9	0.5	4.9	5.3	4.3	4.3	3.4	2.6	2.2	2.7	3.3
Sub - Saharan Africa, non - resource -intesive countries	6.0	4.9	6.4	5.4	5.7	6.5	6.6	6.6	5.6	6.0	6.3
Sub- Saharan Africa, frontier emerging market economies	6.8	4.2	7.3	5.1	4.5	5.2	5.1	3.6	1.4	2.7	3.4

Source: International Monetary Fund , World Economic and Financial Survey (2017b)

From 2009 to 2016, the economic growth of sub-Saharan countries was 3.4 percent . The country is resource-intensive, but is experiencing relatively lower growth than other resource-intensive countries in sub-Saharan Africa.

The growth rate of non-resource-intensive countries from 2009 to 2017 is in the region of 5.9 percent. It can therefore be observed that resource-rich countries are characterised by lower economic growth when compared to resource-intensive countries. Development economists of the 1950s and 1960s argued that resource abundance would serve to spur on rapid economic growth by providing countries with the capital required to industrialise their economies and diversify their exports. However, in reality the opposite is happening, with resource-rich countries performing worse than countries that are not resource endowed at providing economic and political opportunities for their citizens (Lonkanc, 2007). This concept is referred to as

the Resource Curse.[1] Figure 1.2 represents GDP growth per capita in relation to mineral output per capita of extractive economies.

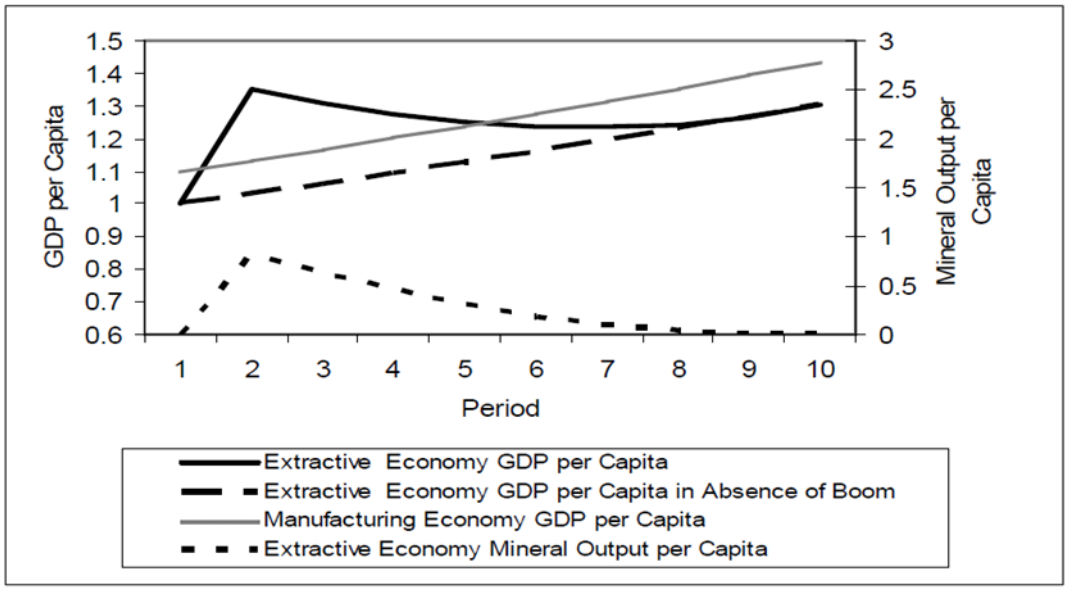


Figure 1.2: Generic GDP per capita of extractive economies

Source: Davis (2009)

The performance in terms of economic growth of mineral-intensive countries and non-mineral-intensive countries is illustrated in Table 1.1. However, this relationship does not exempt South Africa from improving its economic growth, because it is also relatively lower compared to other resource-intensive countries as explained. Instead, the country must work on its determinants for economic growth. This is supported by Hajkowics et al (2010), who found that blame should not only be apportioned to natural resource abundance, but also to the inability of governments to manage mining royalties wisely and in the interests of their citizens.

However, Davis (2009) states that there is mixed evidence regarding the relationship between the extractive intensity of economic activity and the level of human development. Some studies find that mineral and energy intensive economies have

[1] **Resource Curse:** a phenomenon where natural resources are associated with stagnant or negative rates, de-industrialisation and political instability, conflict, weak institutions, and authoritarian regimes (Lonkanc 2007).

higher levels of development than economies without a substantial extractive sector, whereas others find that they have lower development levels. Davis (2009) further indicates that the real problem is that oil and mineral dependence produces a type of economic growth that offers few direct benefits to the poor. Moreover, oil and mineral dependence makes pro-poor forms of growth more difficult as a result of 'Dutch disease'.[2]

However minerals have been a backbone of the economy in countries like Botswana, Chile, Australia and other countries. They can be used through linkages and as an anchor for industrialisation and socio-economic development.

This notion is in line with the school of thought which supports planning, development and policy implementation, or National Development Plans (NDPs) that create an economic climate conducive to economic growth. South Africa, as a mining and mineral exporting country, has developed its policies, NDP strategies, legal prescripts, and administration systems in a manner which will assist in combatting the resource curse. Accordingly, South Africa has developed its NDP up to 2030 and a Mineral Policy (*White Paper: Minerals and Mining Policy for South Africa* 1998). Two Acts related to the research were developed from this policy, namely, the Mineral and Petroleum Resources Development Act (MPRDA), 2002 (Act No. 28 of 2002), and the Mineral and Petroleum Resources Royalty Act (MPRRA), 2008 (Act No. 28 of 2008). The main aim of the MPRRA is to impose royalties on the transfer of mineral resources and matters connected therewith.

The aim of the MPRDA in relation to this specific research topic is indicated under section 2(e) of the Act (MPRDA), which is to promote economic growth and mineral and petroleum resources development in South Africa. In order to achieve inclusive economic growth, the MPRDA must be applied alongside other acts and legal prescripts, such as the Exchange Control Regulations of 1961, which were promulgated in terms of section 9 of the Currency and Exchanges Act, 1933 (Act No. 9 of 1933), read together with the currency and exchange guidelines for business entities with other applicable prescripts. In order to support nationalism and socio-

[2] The allusion to Dutch disease effects refers to the experience of the Netherlands in response to volatility in the price of natural gas (Otto & Cordes 2002).

economic contributions as indicated, the country has a mining charter which is regulated in terms of section 100 of the MPRDA.

For performance bonds and rehabilitation costs, the MPRDA is applied in conjunction with the National Environmental Management Act, 1998 (Act No. 107 of 1998), which also forms a framework for the Air Quality Act, Waste Management Act, and others.

According to Mabuza (2016), the South African NDP was introduced in 2010 with the aim of creating large-scale, sustainable jobs in key sectors through a collaborative approach. It was anticipated that this would encourage trade, innovation and economic growth of up to 7 percent per annum, and that it would ensure that South Africa remained at the forefront of fast-growing emerging economies and also remain an attractive investment destination. The country is also using the Mining Phakisa in order for mining help it achieve the NDP Vision 2030.

According to the Department of Economic Development (2016), the mining sector is among the sectors that were identified as having a role to play in the National Growth Path (NGP) and the NDP Vision 2030. The latter outlines 12 government outcomes and has been allocated six Strategic Integrated Projects (SIPs) to achieve the 2030 vision for the country. This is illustrated in Figure 1.3, which aligns the contribution of the different sectors to the NDP and the NGP.

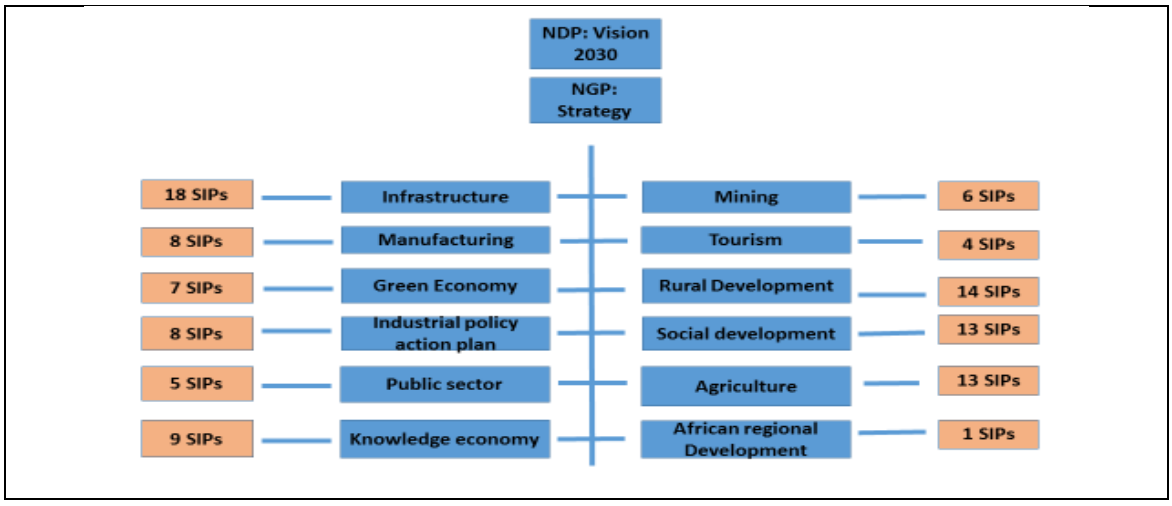


Figure 1.3: The alignment of the mining sector to the NDP

and the NGP strategy

Source: National Planning Commission (2011).

The country also has an objective of achieving Sustainable Development Goals (SDGs) by the year 2030 and among the goals is goal number 8 which is about decent work and economic growth. It will be established later in the report under section 3.2 that most of the determinants of economic growth, if they are supported, will help the country to simultaneously realise other objectives of the SDGs, together with those of the Millennium Development Goals (MDGs).

Statistics South Africa (2015) indicates that some domesticated indicators, such as GDP per capita in current prices, do not adequately reflect the real levels of growth and economic activity. It indicates that strong growth is critical to address inequality and unemployment. It further indicates that the country experienced strong growth in the immediate post-apartheid pre-recession years, recording a 10.9 percent increase in real GDP per capita between 2001 and 2007 (equalling annual growth of 3.4 percent). Since 2007, growth has slowed substantially, with real GDP per capita growth reducing to an annual rate of increase of 0.3% between 2008 and 2013. As indicated before the 2008/9 period, the impacts on employment were driven by strong global and local economic growth, which drove higher levels of output and increased demand for labour. It has been shown that there is a link and a relationship between South Africa‘s NDP to SDG indicators, since they are likely to be largely applicable to South Africa’s context. The country should therefore focus on making greater use of official, applicable SDG indicators, especially where these indicators relate directly to its development priorities as expressed in, for example, the NDP.

Mining can help South Africa‘s vision of meeting the aspirations of the Agenda 2063 as adopted by the African Union (AU), which is specifically to have a prosperous Africa, based on inclusive growth and sustainable development. The above aspirations have the following projections or goals:

- African people have a high standard of living, and quality of life, sound health and well-being;
- Well educated and skilled citizens, underpinned by science, technology and innovation where a knowledgeable society is the norm and no child misses school due to poverty or any form of discrimination;
- Cities and other settlements are hubs of cultural and economic activities, with modernized infrastructure, and people have access to affordable and decent

housing, including housing finance, together with all the basic necessities of life such as water, sanitation, energy, public transport and ICT;

- Economies are structurally transformed to create shared growth, decent jobs and economic opportunities for all;
- Modern agriculture for increased production, productivity and value addition contributes to farmer and national prosperity and Africa's collective food security; and
- Africa's unique natural endowments, its environment and ecosystems, including its wildlife and wild lands are healthy, valued and protected, with climate resilient economies and communities (Brand South Africa 2015).

Maxwell and Gui (2006) explain that a mineral asset must be replaced by a sustainable man-made asset. This may be in various forms such as social infrastructure that facilitates economic activities. Examples of such social infrastructure include education, healthcare, transport, water, electricity, and technological research and development. These fields are significant when considering elements such as the Gross National Product (GNP) and the GDP. For example, the better the technology and education of a particular country, the relatively higher the output (production), resulting in higher GNP and GDP. Consistent growth in GDP and GNP ultimately results in economic growth.

The mining industry contributes to economic growth through taxation, job creation and foreign exchange earnings. In relation to taxes, the mining sector pays corporate taxes, value-added tax (VAT) when purchasing equipment, and royalties as regulated in terms of various acts to be discussed in this study. The contribution of the various industrial sectors to the economy in the 2016 financial year (third quarter) is summarised in Table 1.3. The leading industries are finance and insurance, real estate, and business services, which contributed nearly R805 billion to the GDP. The growth in year 2016 was the motivation for this research work.

Table1.3: GDP at current prices, production approach (seasonally adjusted annualised rates), South African Reserve Bank (2016)

	National Domestic Product	From Mining	
	R' million	R' million	Percentage (%)
2004	1415237	91198	6.4
2005	1401067	105992	7.6
2006	1572319	132301	8.4
2007	1792076	156970	8.8
2008	2033207	196525	9.7
2009	2174512	196521	9.0
2010	2412490	227117	9.2
2011	2670504	260381	9.6
2012	2835087	221731	9.2
2013	3172962	284802	9.0
2014	3404493	286606	8.4

Source: Department of Mineral Resources (2016)

According to Department of Mineral Resources (2016), the total state revenue from the mining sector decreased significantly by 29.6 percent from R18.9 billion in 2013 to R13.3 billion in 2014. The largest contributor was Iron ore at 31.7 percent to the total state revenue, followed by chrome and platinum at 14.8 and 13.7 percent, respectively. This can be seen also from the percentage growth of the sector during the years 2013 and 2014. The sector has contracted down to negative 1.4 percent (-1,4) in 2014 from the growth of four percent (4%) in 2013. This is illustrated in Table 1.4.

Table 1.4 The percentage growth of various sectors from 2011 to 2016

Percentage	2011	2012	2013	2014	2015	2016
Agriculture, forestry, and fishing	2.0	1.8	3.6	6.9	-5,9	-7
Mining and quarrying	-0,7	-2,9	4.0	-1,4	3.2	-4,1
Manufacturing	3.0	2.1	0.8	0.1	-0,3	0.7
Electricity and water	1.5	-0,4	-0,6	-1,3	-1	-2,9
Construction (contractors)	0.4	2.6	4.6	3.6	2.0	1.4
Wholesale and retail trade, catering, and accommodation	4.1	4.0	1.9	1.4	1.4	1.1
Transport, storage, and communication	3.5	2.4	2.8	3.1	1.4	-0,1
Finance and insurance, real estate, and business services	4.3	3.0	2.5	2.4	2.8	2.1
Personal services	2.5	2.1	2.2	1.7	1.1	1.1
General government GDP	4.7	3.0	2.9	2.7	0.7	1.7
GDP	**3.3**	**2.2**	**2.3**	**1.6**	**1.3**	**0.4**

Mnyameni (2016) indicates that mining is among the key sectors that contribute significantly to the country's economic growth and keeps the economic engine running. The other key sectors are manufacturing, retail, financial services, communications, agriculture, and tourism. Between 1999 and 2008, the finance and manufacturing sectors were the major contributors to GDP, with an average of 20.4 percent and 18.8 percent respectively. These two sectors were followed by mining and agriculture at 7.9 percent and 3.3 percent respectively during the same period. Therefore, mining is in the top four key sectors that are critical for economic growth in the country.

This contribution cannot be underestimated when taking into account that it is one of the largest contributors from the ten listed industries, and that it was the highest contributor of the primary sectors, which includes the agricultural sector. Although minerals are non-renewable and susceptible to market risks like other industries, mineral resources are immovable and are thus less affected by natural phenomenon such as climate change. Man has little or no control on the effects of climate change on production or economic growth. Table 1.4 shows that mining has shown negative annual growth from 2011 to 2016, with only 2013 and 2015 having yielded positive growth.

In terms of taxes, mining contributes to the fiscus and hence to economic growth, through the payment of royalties, corporate taxes, and VAT and, in relation to this study, mining contributes through quasi taxes as well. The contribution of mining to economic growth is presented in Figure 1.4. The industry also contributes to inclusive growth through Black Economic Empowerment (BEE), Employee Stock Ownership Plans (ESOPs), and so forth.

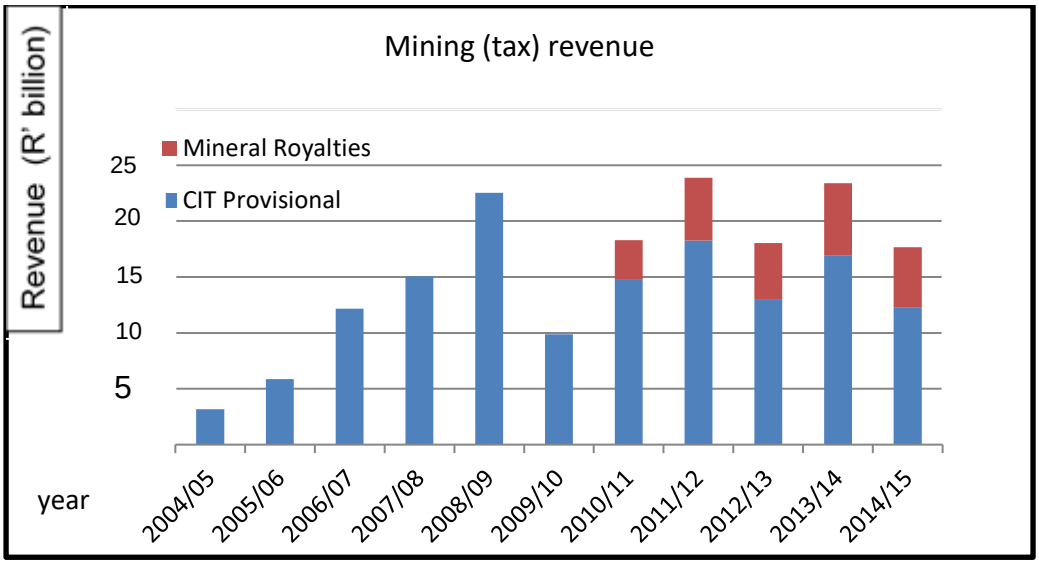


Figure 1.4: Mining tax revenue from financial year 2004 to 2015

Source: Ramontja (2016)

In 2015, mining made a direct contribution of R286 billion to GDP. The GDP growth rate was 3.2 percent wherein mining contributed 7.1 percent to GDP in the same year. This is shown in Figure 1.5.

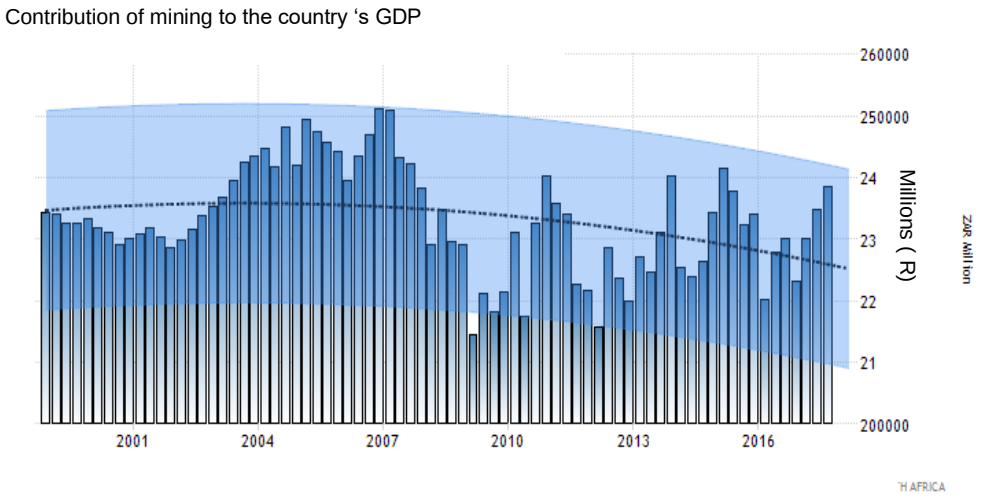


Figure 1.5: The contribution of mining to the country's GDP

Source: World Bank 2017

The direct contribution of mining to fixed investments amounted to R89.4 billion in 2015 and the total sales were at R387 billion in the 2015/2016 financial year. The royalties paid amounted to R3.7 billion, compared to R12.5 billion paid in taxes. The payment of royalties comprised approximately 29 percent of the total taxes paid by mining companies. This study will focus on quantifying the amounts spent on quasi taxes and comparing them to the amount contributed to GDP and even to the tax paid by mining companies. The aim is to map the correlation of the amounts in order to quantify the impact of these taxes.

For more than a century, the mining industry has contributed to shaping the development trajectory of the South African economy, making a relatively significant contribution to the country's GDP. In 2015 mining contributed 8 percent of GDP (Samanga 2016). Mining and quarrying contributed approximately R1 031.1 trillion to the country's economy in the period from 1999 to 2008. It further contributed R3.6 trillion in exports, of which 31.2 percent came from mineral exports (Mnguni, 2010).

Bonga (2011) points out that mining is considered the sixth main contributor to the GDP, clearly contributing to the economic growth of the country while also being one of the main employers in the country. For the 2011/2012 financial year, mining contributed 12.3 percent of the Gross Fixed Capital Formation (GFCF), which is an increase of 12 percent over the 2009/2010 financial year. The role of mining in ensuring more balanced economic growth in South Africa cannot be underestimated, since it is associated with the potential to make a substantial contribution to job creation and transformation and other positive contributions. It is also important to take into account that mining contributed 9.8 percent to GDP in 2011 (Masetlana 2013).

Furthermore, the mining industry contributes to the national fiscus through royalties, by paying approximately R5.6 billion, R 5.02 billion, R 6.4 billion in financial years 2011/2012, 2012/2013 and 2013/2014 respectively. This is illustrated by Figure 1.6.

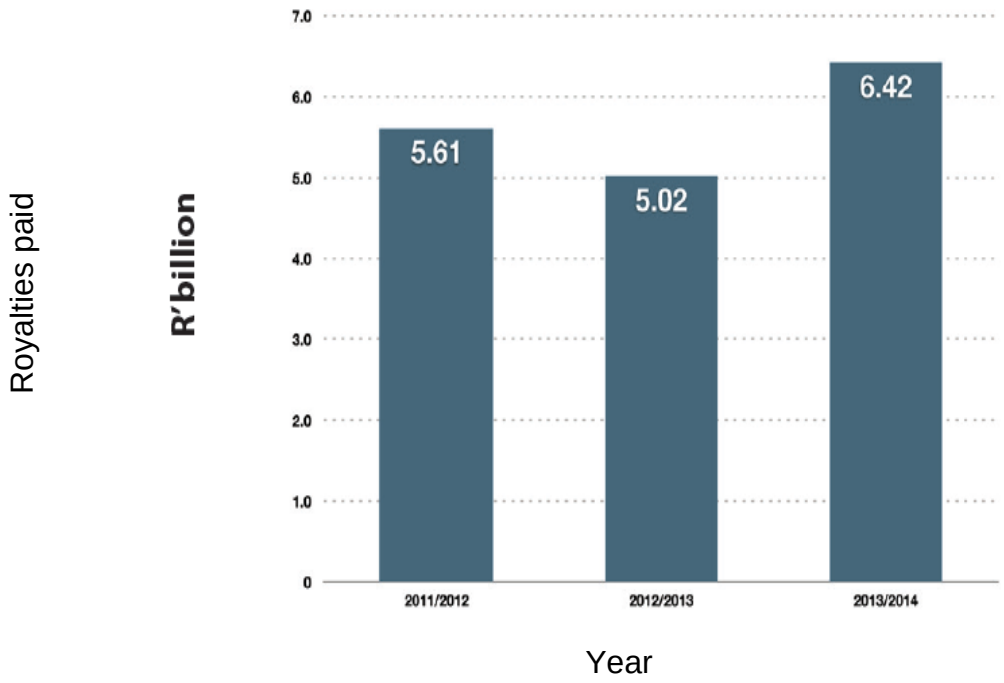


Figure 1.6: Royalties paid by mining companies to the South African government Revenue Service

Source: Chamber of Mines of South Africa (2014)

The South African mining industry, like in other countries, faces a system of taxation. The taxation system is specified as comprising direct, indirect and quasi taxes. These types of taxes are designed to address the specific needs of a country and society. The taxes are compiled in a manner that maximises the revenue captured from the mining sector to satisfy the needs and objectives of the government and the society, while meeting the mining investment criteria.

In order for the mining industry to contribute to inclusive economic growth, all taxes (including quasi taxes) must be captured within an economic climate that is characterised by, among other requirements, certain effective mining tax regime elements such as transparency, equity and clarity, and others that will be discussed in detail under section 2.9 of this report. Quasi taxes must also contribute to and be oriented to the determinants of economic growth such as skills development, technology and innovations, the rule of law, the quality of institutions, and others, as will be clearly discussed in Chapter 2.

According to Otto *et al.* (2006), in terms of mining taxation, governments rarely believe that companies pay too much tax. Companies, on the other hand, rarely believe that

they pay too little tax, while citizens rarely believe that they actually see tangible benefits from the taxes that are paid.

Mining investors take into account these taxes when designing their cash flows for mining projects, while the government (Department of Mineral Resources: Mine Economics in the case of South Africa) has a role to play in monitoring the way in which these taxes are budgeted for in these projects. Furthermore, the Department of Mineral Resources, through its Social and Labour Plan section of the Mineral Regulation, has the role of promoting sustainable economic growth by monitoring and advising on the distribution and selection of the types of projects to which mining companies should apply the revenue of quasi taxes. These include Local Economic Development (LED), Human Resource Development and other elements of sustainable development.

The effects of quasi taxes cannot be realised if the revenues are distributed to projects that are not well managed, that produce relatively low economic growth, or that do not stimulate growth in the economy. This study will assess the impact of these special taxes on the current economic growth of the country and how they may be better distributed without designing new facilities for taxation in this regard. The research will further investigate how quasi taxes can be aligned to the determinants of economic growth.

This study will focus on quasi taxes, which will include foreign exchange regulations, government equity, environmental taxes, performance bonds, and contribution to communities. In addition, it will focus on how such taxes may be distributed to stimulate economic growth in the country. While it is one thing to capture the rents from mining companies, it is certainly another to ensure that economic growth is realised as a result. Moreover, when considering the use of these revenues, the recipients of the tax also matter. Therefore, this study aims to delineate the distribution of these rents which subsequently leads to mapping the recipients of revenues. This work will trace and map possible growth projects that will stimulate economic growth in the country.

1.2 Research Objectives

The five objectives that this study aims to achieve are shown below. These objectives are categorised into specific and general objectives:

1.2.1 Specific objectives

The specific objectives of this study are as follows:

- to assess the extent to which quasi taxes are contributing to the economic growth of South Africa;
- to assess how the country can enhance the effectiveness of quasi taxes for economic growth through the determinants of economic growth in South Africa; and
- to assess whether the quasi taxes possess the attributes of a good mining tax regime, which can maximise the contribution to the economy.

1.2.2 General objectives

The study has the following general objectives:

- to create awareness of and reveal the extent to which inadequate planning in terms of these costs (quasi taxes) can affect the Net Present Values (NPVs) of mining projects; and
- to determine how these can affect potential economic growth.

1.3 Rationale

According to Gordhan (2016), the country's growth rate was projected to be less than 1 percent (or at least 0.9 percent) for the 2015/2016 financial year.

This growth rate, which is less than 3 percent per annum, will

- fail to reverse the unemployment crisis in the labour market;
- not provide adequate resources for the necessary expansion of social service delivery; and
- yield insufficient progress toward an equitable distribution of income and wealth (Roux *et al.*).

This projected and resultant economic growth rate was not ideal for job creation, alleviation of poverty, or reduction of inequality in the country. Another concern is over the downgrade of the country's sovereign debt rating by Standard & Poors to junk status, following what was said to be the result of an illogical and damaging cabinet reshuffle. The Chamber of Mines of South Africa was consequently concerned that this would lead to higher capital costs and increased government and private sector borrowing costs, increasing the portion of government revenue that was to be allocated to covering debt service costs. It was feared that this would lead to crowding out other key government programmes, weakening the currency and raising inflation, ultimately affecting investment, growth and employment creation (Chamber of Mines of South Africa 2017).

An economic climate with the above mentioned characteristics might lead to the private sector (in particular the mining industry) being responsible for services, infrastructure and other responsibilities in affected communities. Proper implementation of the revenues obtained through the quasi taxing of mining companies might help in alleviating some of these consequences.

In support of growth and development, the government is also working on the regulatory challenges that affect mining investments and employment. There is a need for government to ignite growth in order to achieve an ideal economic status. There is thus a growing appetite on the part of the South African government for ensuring fairness and inclusivity in the design of tax systems and in the manner in which the country benefits in terms of environmental and health objectives. There is also a need to moderate the increased taxation of households and firms, as well as to promote inclusive growth.

Otto and Cordes (2002) indicate that the colonial construct of mining was based on supplying raw materials especially to Europe, thus creating an enclave of African mineral economies. The postcolonial period was dominated by an underperforming, state-led mineral industry, and subsequent reforms led by the World Bank. The African mineral sector needs reorientation to better meet the continent's development needs. The African Union, through the Assembly of the African Union, a semi-annual meeting of the heads of state and government of its 55 member states, has taken critical decisions, in order to mainstream governance best practices, such as the Extractive Industry Transparency Initiative (EITI) into their respective policies, laws, regulations,

codes and standards; and expand the initiative to address upstream and downstream issues such as licensing, procurement, ownership, and sustainable development and call for its urgent operationalization. In line with the above, the African Union (AU) Heads of State and government further requested member States, in line with the extraction industry, to particularly improve their mineral resources policies, establish appropriate institutional, legal and regulatory frameworks, and invest in human skills, research and development, and geological and geophysical data, that are critical for the efficient and effective management of mineral resources. The Heads of State also called upon the Commission and New Partnership for Africa's Development (NEPAD) Secretariat, as well as regional economic communities to accelerate the establishment, across Africa, of major integrated corridors for the development and optimal exploitation of the continent's natural resources (Action Plan of the African Mining Vision, 2012).

When deciding to invest in a country, corporate tax will only be one piece of the overall tax cost under consideration (PricewaterhouseCoopers, 2012). Globally, the overall tax burden on mining companies has shown an increasing trend, because governments view mining companies as quite profitable in light of increased mineral prices. This view has resulted in a growing and high demand for rentals from mineral projects. There is therefore a need to adequately plan for and understand how the overall tax burden will affect the NPV of a particular project.

Manuel (2007) suggests that more rapid economic growth is associated with rising savings and investments, since this leads to a fall in the cost of capital. He further indicates that it also helps to incentivise organisations to finance the skills acquisitions and development that are the main requirements of labour productivity, contributing to a rise in real wages and a decrease in poverty. Kirkpatrick, *et al* (2002) indicate that after the Second World War there was a need to gain independence from the colonial masters. This was accompanied by a call for rapid development, in order to make economic independence possible and to raise living standards. This was not always feasible, however, since this development thinking and policy came with four main constraints which held implications for planning, policymaking and action:

- domestic action to accelerate economic growth;
- external policy and action, including international policy;
- investment in human resources; and
- Poverty reduction and income distribution.

South Africa must follow the vision of other African countries and the objective of the Africa Mining Vision by promoting a well-governed mining sector that effectively garners and efficiently deploys rental resources, and is environmentally friendly, while also being socially responsible and valued by the surrounding communities (Africa Mining Vision, 2009).

This study will establish whether quasi taxes are robust, dynamic and in keeping with the times. This is because the modern school of thought requires that the principle tax canons of equity, certainty, convenience and economy, also include the broader principles of social justice (Venter *et al,* 2013).

Quasi taxes should be clearly understood. This is critical because they are considered by financial institutions to hold certain risks in mining projects. This is in terms of, for example, environmental and social risks (artisanal mining, rehabilitation, resettlement of communities, influx, management, emissions, and water management).

Chen (2016) points out that metals and minerals prices are key drivers of South Africa's GDP and the growth in these prices is highly correlated with South Africa's GDP growth. Hence, there is a positive correlation between an increase in GDP and commodity price booms.

There is a need to promote and stimulate the effects of quasi taxes, since South Africa needs to grow by more than 7.2 percent in order to meet the 2030 NDP. However, according to Mabuza (2016), the promulgation of the MPRDA has led to an increase in Gross Fixed Capital Formation (GFCF), (Figure 1.7).

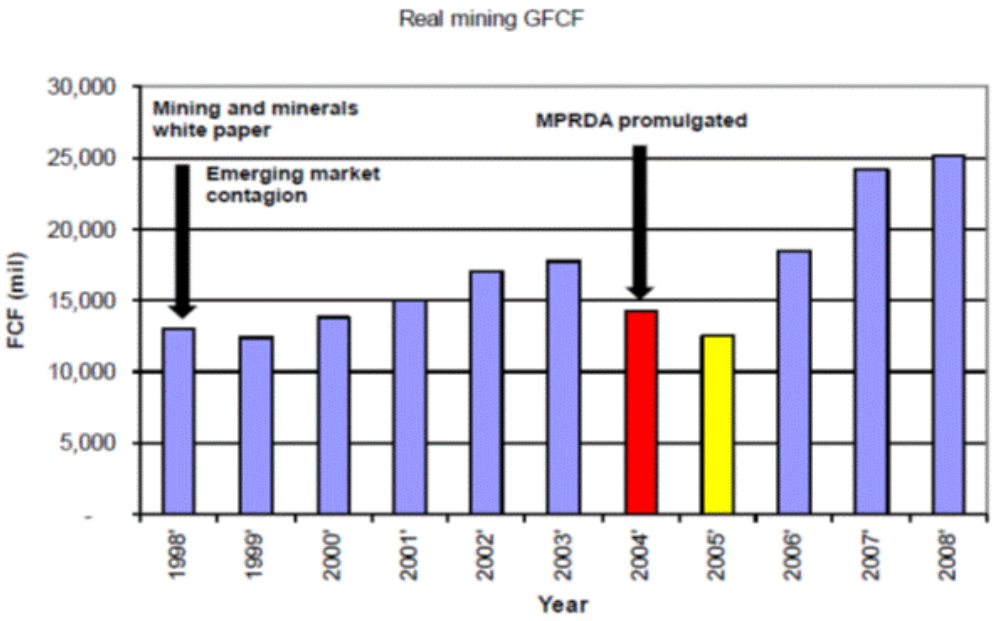


Figure 1.7: The real mining GFCF from 1998 to 2008

Source: Mabuza (2016)

South Africa has regressed in terms of attracting direct foreign investments in mining and was ranked 66 out of 109 countries in 2015 and further regressed to 74 out of 104 countries in 2016 (Fraser Institute, 2016). This is directly linked to the decrease in potential mining development and potential economic growth. The Chamber of Mines of South Africa (2016) indicates that from the Fraser institute ranking of 2014, the country is receiving negative ratings as a result of uncertainty concerning disputed land claims, political stability, labour regulation & work disruptions (labour militancy), trade barriers, taxation regime, security situation, socio-economic agreements, uncertainty on administration and interpretation of regulations, efficiency of the mineral legal system and regulatory duplication and inconsistency.

The Foreign Exchange market (forex market) was the single biggest market in terms of turnover of the South African financial markets (Commission of Inquiry into the Rapid Depreciation of the Exchange Rate of the Rand and Related Matters, 2001). This market is supported by the openness of the South African economy and this is extremely important for economic growth. The report of the Commission of Inquiry into the Rapid Depreciation of the Exchange Rate of the Rand and Related Matters (2001) further indicates that forex dealers do more than half the trading on this market, while other financial institutions such as insurers and pension funds do over a third and

companies such as mining companies, multinationals and local importers do roughly a sixth.

South Africa's current account deficit remains close to 3.5 percent to GDP; this is related to a slow-down in export growth and a low-income balance (World Bank Group 2017). Sithole (2008) argues that a developing country like South Africa has to depend on foreign exchange control to protect its industries and to control its balance of payments.

Silberman & De Wet (2017) indicate that with respect to growth, South Africa's biggest risk, apart from political volatility, was the outlook for commodity prices and global growth. Following the significant improvement in commodity prices in the second half of 2016, Standard Bank revised the GDP growth forecast for 2017 from 1.0 percent to 1.4 percent. Because the outlook for commodity prices is uncertain, with the fundamental underpinning not well understood, they assessed risks to growth to be on the downside.

Masgrave (2002) maintains that balance of payment difficulties which arise from foreign investment may impose social costs - the cost of adjusting to the redistribution of world income consequent on foreign investment.

This study was motivated by the fact that quasi taxes are often significant and have tax design implications, resulting in them inevitably being considered by mining investors when considering mining projects.

Mitchel (2005) indicates that mining taxation (including quasi taxes) forms part of the mining investment elements to be considered by investors and this is illustrated in Figure 1.8. The most critical element is geological information, and in terms of quasi taxes the highest risk criterion to be considered is realistic foreign exchange controls. Items 2, 9 and 10 are tax dependent, while items 4 and 7 are tax related. This means that the geological potential for target minerals, ability to predetermine tax liability, and the stability of tax depend on the type of tax instruments that are used in a country. They also depend on the type of tax, that is whether it is profit-based or production-based, or any other requirement or method of mineral taxation. While the ability to repatriate profits and the stability of exploration terms and conditions are tax related, they are not tax items, although repatriating profits may be constrained by taxation and the stability of exploration terms and conditions. In South Africa exploration

expenditures are paid back when a prospecting right graduates to a mining right or a mining permit. The amount can be claimed back from the South African Revenue Service (SARS).

Table 1.4 The top ten (10) company decision criteria in mining investments

Geological potential for target mineral
Profitability of potential operations
Security of tenure and permitting
Ability to repatriate profits
Consistency of mineral policies
Realistic foreign exchange controls
Stability of exploration terms and conditions
Ability to pre-determine environmental obligations
Ability to pre-determine tax liability
Stability of tax Item 2 ,9 & 10 -Tax depended and Item 4 & 7 are tax related

Source: Mitchel (2005)

Another aspect which is crucial in the field of natural resource economics is the concept of resource nationalism[3] which is gaining momentum globally, as there are more drivers than in the 1970s, when the trend was triggered as a reaction to colonisation and high commodity prices. Other factors that are driving resource nationalism include practical efforts to induce the socio-economic development contributions of extractive sectors and balancing an enabling environment for reasonable business practice with predictable economic interests by governments seeking to increase their share of profits, bilateral relations, and diplomatic ambitions (Cawood & Oshokoya 2013). This research is therefore based on the impacts of quasi taxes on the economic growth of South Africa.

[3] **Resource nationalism:** The desire of the people of resource-rich countries to derive more economic benefit from their natural resources and the resolution of their governments to concomitantly exercise greater control of the country's natural resource sectors. The forms in which these sentiments and control mechanisms are manifested vary widely (Solomon 2012).

1.4 Key Questions

The key questions to be addressed are as follows:

- What are the determinants of economic growth that can be aligned to quasi taxes?
- Does capturing of quasi taxes lead to automatic economic growth?
- What are the constraints on the contribution of the mining sector and particularly quasi taxes to economic growth?
- To what extent can quasi taxes influence the investment decisions, planning and profit of mining operations?
- How does inadequate consideration of the attributes for a mining tax regime affect mining investments?

1.5 Hypothesis

Alignment of quasi taxes to the determinants of economic growth and improving the elements of a good tax regime can increase the contribution of quasi taxes to economic growth in South Africa.

1.6 Scope and Limitation of the Research Study

This section presents the scope of the work, indicating the aspects that will be covered by the research and those that fall outside the scope of the research. In addition, the section will indicate the limitations (constraints) that were identified when attempting to achieve certain aspects of the research. The scope and the limitations are summarised as follows:

The scope of the research includes the effects of quasi taxes on economic growth in South Africa. However, it will not involve direct or indirect taxes that affect the mining industry. The research also focuses on the positive effects of quasi taxes and their outcomes in terms of growth in the country. The study focuses on the four quasi taxes identified by Otto & Cordes (2002).

The main expected outcomes of the research will be a list of the effects of quasi taxes, as well as a quantification of both the direct and indirect contribution of quasi taxes to the GDP, to explain how the discounted cash flow (DCF) method of mineral projects

is evaluated and how the NPV method of costing projects can be affected by inadequate consideration of quasi taxes.

Note: The scope does not include the studying of any policy documents but looks at an amalgamation of policy, financial, engineering and other documents as deemed necessary. This was done in order not to be ring-fenced by any single policy document.

Limitations of the research: These are the technical limits to the project and include time constraints, financial constraints and travelling constraints.

1.7 Research Methodology

This research was both qualitative and quantitative. The information used was extracted from policy documents, various Acts, annual reports of government departments, and annual reports of mining companies. This involved reviewing information through a desktop study of the literature by various authors. A model was subsequently developed from the literature survey, which also assessed the contribution by various sectors to the GDP of the country. The research entailed the quantification of the contribution of the various quasi taxes against the contribution made by other mining taxes to the GDP.

The research also assessed the way these taxes contribute to the economic growth of the country, thus identifying the determinants of economic growth. A desktop study in the form of web-based research was done to collect data on the status quo of the determinants of economic growth, and options and measures were recommended where a need was identified for quasi taxes to contribute. This study also measured the extent to which quasi taxes have contributed to the determinants of economic growth. For this purpose, a comparison was conducted from the Economic Community of West African States (ECOWAS) region, since this region has relatively higher economic growth. The research also used a case study approach using publicised annual reports of three mining companies. The annual reports are listed in the bibliography.

The collected information was analysed and interpreted in order to both quantitatively and qualitatively assess the effects of quasi taxes on economic growth in South Africa.

1.8 Research Outline

The research work was divided into different chapters which are delineated as follows:

CHAPTER 1: INTRODUCTION

This chapter discussed the current status of the South African economy, as well as the constraints to economic growth of the country. In addition, the country was compared to its peers in certain regional groups (SADC) and BRICS, as well as in regard to economy types (mineral-intensive countries). In outlining and quantifying economic growth, the contribution made to GDP by the various economic sectors was presented. In presenting the various sectors, the mining sector was singled out as one of the sectors that contribute to GDP. In addition, the manner in which the sector contributes to economic growth and the GDP of the country was explained, and taxation was further singled out as a means of capturing the mining revenues that contribute to GDP.

The chapter further explains how quasi taxes are indirectly and directly contributing to the taxation system, and the way in which they contribute to the GDP and economic growth. In line with the explanations, the chapter outlines some of the determinants of economic growth and indicates how these taxes are regulated and captured, and how the country is enhanced by the contribution these taxes make to economic growth. In addition, this chapter includes a discussion of the rationale, the research objectives, the hypothesis, the methodology and an outline of the research.

CHAPTER 2: LITERATURE REVIEW

This chapter assesses the local literature in regard to economic growth and the research on endogenous growth and convergence economic growth, and also lists the determinants of economic growth. In addition, it includes a review of the literature on the limitations of economic growth, as well as mineral policy, NGP, and the NDP. The concepts of tax and quasi tax are defined and explained, as are their applications in the mining industry. The research on the evolution of the tax system in mining and specifically quasi taxes is also discussed. This chapter also investigates production-based and profit-based taxation systems and their impact on government objectives, investors' objectives, and the mining-affected communities; how these

taxes evolved, how they are regulated and how they are factored into mine planning; as well as the effects these have on economic growth. The literature review concludes by linking quasi taxes to mining taxes, linking mining taxes to the contribution of mining to economic growth, and linking the mining sector to other sectors of the economy, while also linking all sectors (agricultural, finance and other sectors) to economic growth and particularly GDP growth per capita. Further, the need for a good mining tax regime to display transparency, equity, clarity and other characteristics is discussed. The chapter also includes a list of the effects of the various quasi taxes.

CHAPTER 3: DATA COLLECTION, DATA FINDINGS, INTERPRETATION AND DISCUSSION

This chapter introduces the data collection methods used in this study.

Data on the four quasi taxes and how each contributes to the GDP and economic growth was collected. This data includes the various provisions of quasi taxes, such as the amount paid to communities, employees and strategic partners. This chapter also focuses on the total amount paid in the form of tax to government, when dividends are paid and other gains associated with BEE transactions are realised.

The data collected in this study was mainly web-based. Factors were identified as determinants of neoclassical endogenous economic growth. Data was also collected on capital (human capital, natural capital, financial and other capital) and innovation and technology.

CHAPTER 4: CASE STUDY

This chapter presents the findings from four different mining companies in relation to their contribution to communities, foreign exchange gains, rehabilitation and equity among communities, entrepreneurs and employees, with regard to ownership.

CHAPTER 5: SUMMARY AND CONCLUSION

This chapter quantifies the effects of quasi taxes on economic growth and GDP, based on samples used to assess the impacts of quasi taxes on economic growth. It also indicates the significance of this contribution to the determinants of economic growth, even if the revenues are paid directly to affected communities. The chapter also indicates whether the objectives of the research were achieved and, if so, how they were achieved.

CHAPTER 6: RECOMMENDATION FOR FURTHER RESEARCH

This chapter focuses on recommendations for further research where research gaps have been identified and where there is a need for detailed research to be conducted on certain aspects. It also recommends the requirements that are needed for the better benefit of the communities and the government from the taxes.

2 LITERATURE REVIEW

This chapter provides an overview of quasi taxes and the elements associated with them in the mining industry, both in South Africa and internationally. It includes a literature survey and analysis pertaining to the research topic. The main topics covered include economic rents and mineral rents, tax, quasi taxes and their attributes, economic growth, and other elements.

2.1 What Is Economic Growth?

Otto and Cordes (2002) define economic growth as a persistent increase in a nation's real per capita production or income. These two concepts are not equivalent, as GNP includes income from foreign-owned production that may be accounted for abroad. They have also indicated that the constraints on economic growth have been identified as the unavailability of productive inputs such as natural resources, land, labour, capital and technology among other elements.

According to Reinert (2012), capital resources include all non-human elements such as production, natural resources including land for agriculture, water, forests, mineral deposits, and manmade tools such as equipment and buildings. He further explains investment as spending on capital and future productive capacity. As indicated in Figure 2.1, when a country chooses to produce a relatively large amount of capital on production possibilities such as curve AB, capital will accumulate over time, which increases the ability of the economy to produce capital consumer goods in future. This means that the production possibility frontier shifts outward to EF, for example. This relationship is demonstrated in Figure 2.1.

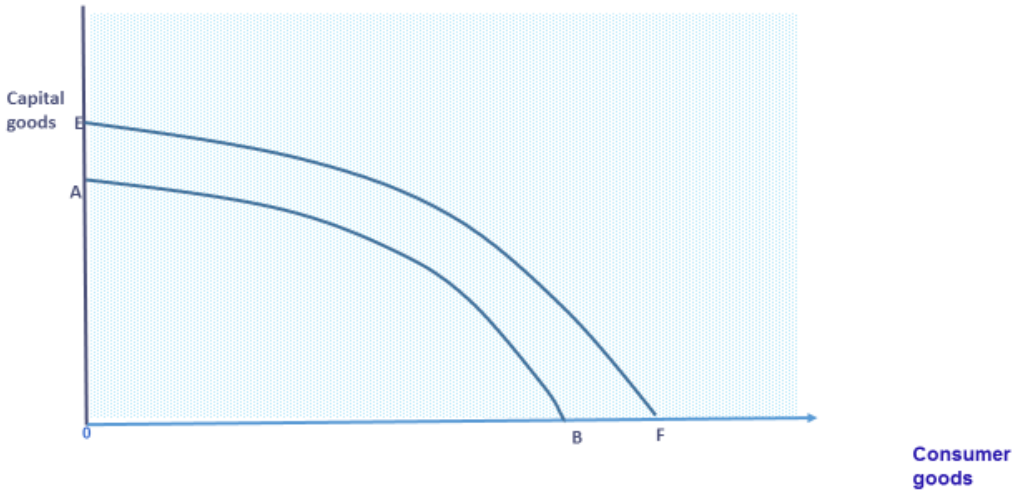


Figure 2.1: The relationship between capital and consumer goods

Source: According to Reinert (2012),

According to Vogely *et al.* (1985), economic growth can be measured by changes in the Net National Product (NNP). However, in practice GNP is more commonly used, because there are difficulties in the measurement of capital consumption (mainly depreciation), which must be subtracted from the GNP to obtain the NNP.

Sithole (2008) indicates that GNP is the output produced by productive factors owned by the permanent residents of a country, whereas GDP is the output produced by the productive factors located within the country, regardless of their owner's nationality.

2.1.1 The Various Determinants of Economic Growth

The sources and the causes of economic growth fall into two categories: supply factors and demand factors. For sustainable economic growth, there must be a balance between the factors that enhance the production capacity of an economy and those that expand the demand for goods and services produced in the economy (Mohr *et-al* 2010).

According to Oshokoya (2016a), economic growth is driven by a combination of factors, which include the quality of current institutions, the rate of technological progress, savings and investment rates, the share of domestic investments in GDP, human capital or the gross school enrolment rate, natural capital share, natural capital

per person, civil liberties, population growth, purchasing power parity (PPP), trade policy and government efficiency. Oshokoya (2016a) further indicates that for someone to identify the effects of mining on economic growth, they must map the effects of quasi taxes (revenues) on the elements listed above.

Mohr *et al.* (2010) divide these factors into two broad categories, as follows:

1. Supply factors are also referred to as the potential output of the economy; they relate to the factors of production and include natural resources, labour, capital and entrepreneurship.
2. Demand factors are those factors that promote adequate and growing demand for the goods and services produced in a country and include (i) domestic demand consumption (C), investment (I) and government spending(G)); (ii) export demand (X); and import substitution, which involves attempts to reduce imports (Z).

The above implies that from the demand side, economic growth in the mining sector can be stimulated by a rise in domestic demand, a rise in exports, or a reduction in imports.

Supply factors (increases in quality and quantity) are not sufficient for economic growth if there is no ideal demand side. Even though South Africa comparatively has more mineral resources on hand, it may not have some of the best methods and technologies to produce the goods and services from mining projects. The country must create an ideal climate for demand for such services (Cawood, 2014).

Investment yields production, which is converted into income, some of which is required for consumption, leaving the rest for investments that yield production. In this way the cycle recurs and the complete cycle, illustrated in Figure 2.1, translates to economic growth. Accordingly, it may be observed that investment is crucial for economic growth because a rise in the rate of investment is one of the indicators of economic growth. South Africa's rating in terms of mining investments is regressing, leaving the country with slower or no growth at all.

This study investigates the significance of investing tax revenues in education, technology and labour and other determinants of economic growth, in order to stimulate economic growth. The research further entails establishing and investigating

the link between education, technology and labour and the GNP, which, in turn, has a direct relationship with GDP. Fedderke (2005) points out that output has a direct relationship with labour (L), capital (K) and technology (A), and the relationship can be expressed by Equation 1 as follows:

$$Y = F(AKL) \quad \text{[1]}$$

The formula caters for the impact of technological change. The most apparent hypothesis is that technological change depends on the magnitude of resources devoted to it. Under this concept, technological advance can effectively be produced by allocating the appropriate inputs to inventive activity (research and development (R&D)). The link between the production of ideas and the resources devoted to their generation has been present in economic theory for some time.

Fedderke further indicated that from Equation 1, the human capital (*H)* can be successfully introduced into a traditional neoclassical growth model of the economy as an additional factor of production. This approach simply recognizes that human capital is itself a productive factor of production, which should therefore be recognized as a driver of growth. Hence *et-al,* (1992) suggest that the introduction of human capital into a Solow model is justifiable, indeed necessary, since by 1969 in excess of 50% of the capital stock of the United State of America (USA) took the form of human rather than physical capital stock. This renders the production function augmented to Equation 2 as follows:

$$Y = F(AKLH) \quad \text{[2]}$$

The implication is that there will be direct increase in output due to augmentation of human capital stocks, as well as augmentation of physical capital, labour and technology. According to Otto and Cordes (2002), neoclassical economic theory is the most relevant theory for mineral exporting countries such as South Africa. It should be noted that the World Bank Group (2017) still classifies South Africa as a mineral exporting country.

According to Tilton and Guzman (2016), a British Economist of the nineteenth century, David Ricardo, and others indicates that mineral resources, together with agricultural

land and fisheries, are seen as natural capital which complements the total capital of a country and can be used to support the financial capital and for economic development (Tilton & Guzman, 2016). Training of employees results in improved production per labour and this improves the GNP, which will in turn result in improved GDP.

Therefore, funds from quasi taxes can be used to improve the economic growth of the country when applied to technology, education and other elements of economic growth. According to Otto and Cordes (2002), the central economic thinking since the 1800s has centred on the four elements of neoclassical economic theory:

- The rational pursuit of self-interest by individuals and firms in competitive markets leads to equilibrium in the outcome that efficiently allocates scarce resources and maximises economic growth;
- Economic growth is a natural and harmonious process made possible by the operation of free and competitive markets;
- The pace of growth is greatly enhanced by unrestricted international trade and factor flows consistent with prevailing measures of comparative advantage; and
- Government interference with market processes reduces efficiency, impedes growth, and leads to an increase in social, political and economic conflict.

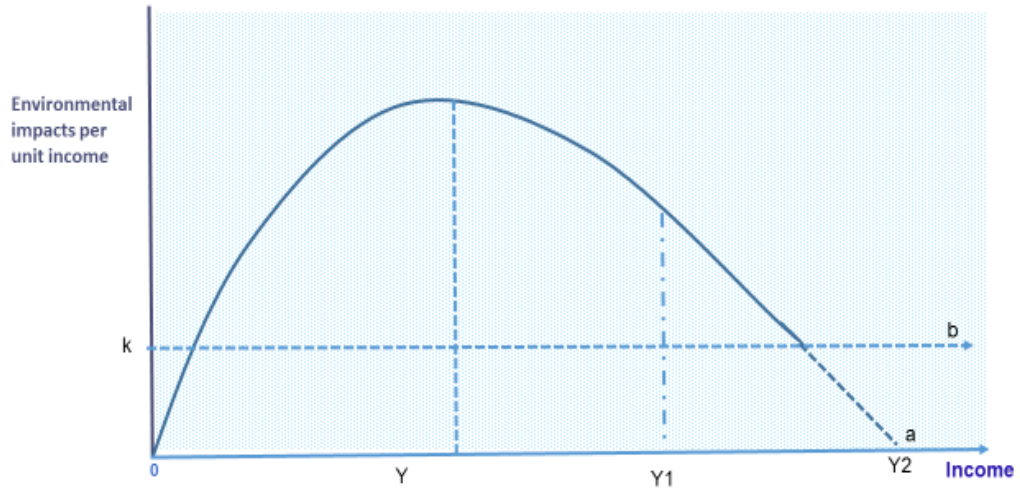
In order to realise real economic growth from mining investments, South Africa has, in all instances, to adhere to the aforementioned pillars of economic growth, as proposed by neoclassical economic theory. This might mean that government must promote free markets and must not ignore international global markets in terms of services, skills and technology. This does not mean that the government should fully depend on global markets, but there is a synergy between local and international markets and their local policies that must not be ignored.

Mining companies and government should therefore use opportunities for investing in technological research and building private research institutions, first and foremost for the mining industry but also for other industries that are linked to the mining industry or even to services and manufacturing.

According to Acemoglu and Robinson (2002), the Kuznets hypothesis proposes that development leads to two main non-democratic paths, namely an autocratic disaster (high inequalities and low output), or the East Asian Miracle, which was associated

with low inequality and high output. According to this hypothesis, it is expected that economic growth will reduce environmental degradation in the long run. According to the Kuznets curve hypothesis, the relationship between environmental health and the economy is reconsidered. The idea is that as economic growth (development) occurs, the environment will worsen due to environmental degradation and pollution, up to a certain point where the average income is reached. Then money is invested back into the environment and the ecosystem is restored.

Perman *et al.* (2003) indicate that there is a certain level, called the *k level*, where development may continue to produce income, but the environmental degradation will not reduce – it tends to remain constant (Figure 2.2).



Year

Figure 2.2: Environmental income Kuznets Curve (EKC) in the long run

Source: Perman *et al.* (2003)

2.1.2 The limits to Economic Growth

Perman *et al.* (2003) indicate that economic growth also has limits, such as environmental limits and social limits. These limits are discussed in the following sub-sections.

Environmental limits

The identified environmental limits are summarised as

- the limit of land available for agriculture;

- the limit of agricultural produce that can be produced per unit area;
- the amount of non-renewable resources available for extraction; and
- a limit to the ability of the environment to assimilate waste arising from production and consumption, where this limit decreases as the level of pollution increases. This was, however, challenged after a conference in Rio de Janeiro, Brazil in 1992, where the Framework Convention on Climate Change (FCCC) required signatories to conduct national inventories of Green House Gas (GHG) emissions and to submit action plans for controlling emissions.

While the number of countries (150 countries) that were signatories to the FCCC appears to be impressive, the large number prepared to sign reflects the fact that the FCCC did not require any country to commit itself to a particular emissions reduction undertaking, or a timetable for any such reduction. However, the parties to the Rio agreement were still unable to agree on strict emission limits at the Berlin summit in 1995, agreeing only on a procedure for negotiating such limits (to be concluded by 1997) and accepting in principle the need for industrialised countries to reduce emissions below the 1990 levels.

The United Nations Environment Programme (2017) indicates that recent developments on the environmental limits include the Cancun Pledge in 2010, wherein many countries submitted their existing plans for controlling greenhouse gas emissions to the Climate Change Secretariat and these proposals were formally acknowledged under the United Nations Framework Convention on Climate Change (UNFCCC). Developed countries presented their plans as economy-wide targets to reduce emissions, mainly up to 2020, while developing countries proposed ways to limit their growth of emissions in the form of plans of action.

The document further indicates that South Africa's Cancun Pledge includes a reduction in greenhouse gas emissions, which will see the country reduce emissions ranging from 400–600 MtCO2e/year in 2020. An independent current policy scenario projection that covers Land use, land-use change and forestry (LULUCF) indicates that South Africa is slightly short of reaching the upper end of this range.

The country is among the G20 member countries such as Canada, Mexico, the Republic of Korea, and the United States that are likely to require further action and/or to have to purchase offsets in order to meet their pledges.

Social limits

This set of limits is based on desirability, rather than feasibility and includes

- cost imposed on future generations;
- the extinction of or reduction in the number of other living non-human species whose habitat disappears;
- the self-cancelling effects on welfare; and
- the corrosive effects on moral standards of the very attitudes that foster growth, such as the glorification of self-interest, and a scientific-technocratic worldview.

Limits on Growth from the Mineral Industry according to the National Development Plan

The major constraints on growth in the mineral industry are as a result of uncertainty over ownership, tax treatment and allocation of mineral rights, the availability of electricity, and the cost and efficiency of transport networks (NDP 2011). Other limits to growth are exogenous factors, given the fact that the mining sector is externally oriented and depends on external demand. This can be observed from the slow growth in the financial year 2008/09 due to diminished western growth. This is because the country is integrated into western economies. Manuel (2007) indicates that for long-term sustainable growth, the country must enable the training and upskilling of its labour force. This can be achieved by focusing on breakthroughs and by easing finance in that process.

2.2 Exogenous and Endogenous Growth Theories

De Jager (2004) found that in terms of the initial neoclassical theory described by Solow (1956) and augmented by others, sustained economic growth occurs through an exogenous factor of production, that is the passage of time. The neoclassical production function used in this theory relates output to factor inputs, which consist of the stock of accumulated physical capital goods (buildings, machinery, transport equipment, computers, and so on) and labour.

2.2.1 Endogenous Growth Theory

According to De Jager (2004), this theory uncovers the private- and public-sector choices that cause the rate of growth of the residual to vary across countries. Two mainstreams of endogenous growth theories have emerged, namely, those focused on technological change and those mainly concerned with human capital. Rossi (2012) mentions that in order to explain the engine of growth, it is important to understand the economic forces underlying technological progress. The endogenous growth theory does not assume that technological progress is automatic.

Barro (1996) states that – according to endogenous theory – the lower the initial per capita growth, the higher the expected economic growth. This means that growth in poor countries would be higher than that in rich countries. Recent research indicates that an application of government policies to economic determinants such as property rights, levels of consumption, spending and the distortion of local and international marketing rights contribute to endogenic economic growth. Moreover the theory broadens to include humans in capital, which includes health, experience, education (particularly science education, technology, engineering and mathematics, since they are key to transformative skills). According to convergence theory, a country which starts with a higher ratio of human capital to physical capital, generally experiences higher economic growth. This is because physical capital is more amenable than human capital to rapid expansion.

In addition, regarding convergence theory, a lack of improvement in terms of innovation and technological progress will lead to the growth coming to a halt. The importance of technological progress is accepted by the founders of economic growth theory such as Ramsey (1926), Solow (1956) and Koopmans (1965). Technological progress has its roots in innovation and new ideas.

2.2.2 Exogenous Growth Theory

According to De Jager (2004), income growth rates are beyond business and government control. Exogenous growth theory assumes that an increase in the stock of capital goods will result in a less than proportionate increase in output, provided the amount of labour employed remains the same. Rossi (2012) points out that

technological progress is the engine of growth and that technological improvements are automatic and un-modelled (exogenous).

For the purpose of this study, the combined determinants of economic growth were extracted from Barro (1996), Rossi (2012) and De Jager (2004) and are tabulated in Table 2.1.

Table 2.1: A list of determinants of endogenous economic growth

Category	Determinants of Economic Growth
Capital (human capital)	Schooling/education
	Health
Capital (physical capital and natural resources)	Level of technology
Choices and environmental variables	Fertility rate
	Government spending on infrastructure and sanitation
	Index of maintenance of rule of law
	Change in terms of trade
	Index on democracy
	Inflation rate

Source: Barro (1996), Rossi (2012), and De Jager (2004)

According to De Jager (2004), two main areas of endogenous theory have emerged, including those focused on technological change and those mainly concerned with human capital.

2.3 The National Development Plan, New Growth Path and Economic Growth in South Africa

The NDP and the NGP recognise the role of mining in growing investments, exports, the GDP and employment. Such growth can be realised through the efforts of the government, which has partnered with organised labour and the mining industry through the Mining Industry Growth, Development and Employment Task Team (MIGDETT) to attend to various challenges facing the mining industry (Mohale *et al.* 2016). The issue of growth and job creation is illustrated in Figure 2.3 (NDP 2011).

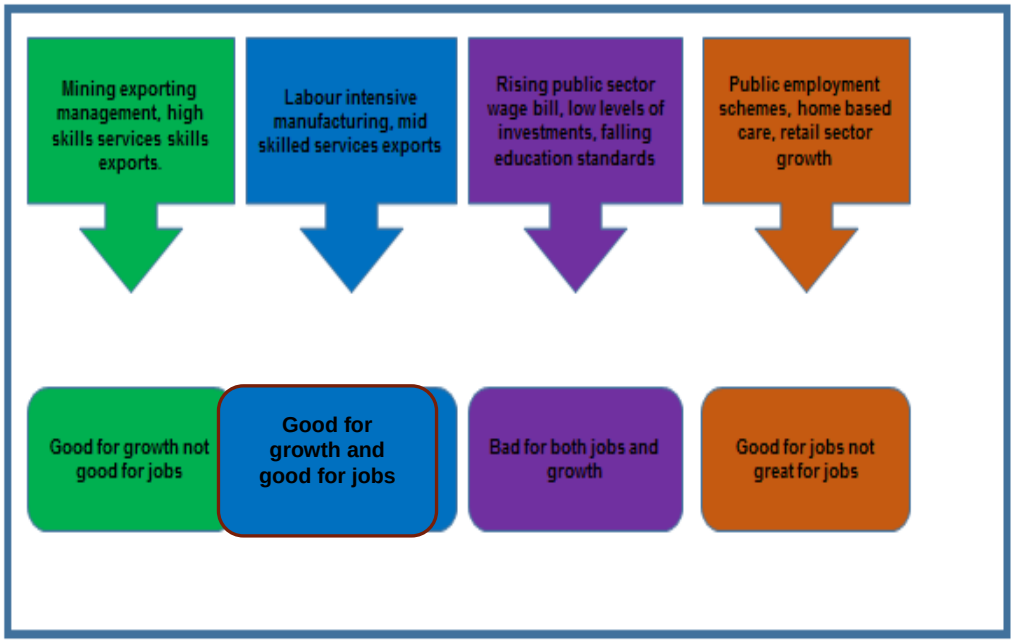


Figure 2.3: The quandary of growth and job creation

Source: NDP (2011)

2.4 Mining Development and Economic Growth

Otto and Cordes (2002) indicate that to achieve positive economic growth, the affected stakeholders must develop and implement appropriate policies. The policies that have been recommended pertain to local economic development (such as the building of business, schools, hospitals, or AIDS prevention); promotion of regional development; promotion of national development; economic linkages; infrastructural development and access; the degree of cooperation between national, regional and local development planning; and sustainability. Potential for economic growth can be constrained by a lack of productive inputs such as natural resources and land, labour, capital and technology.

Fernandes (2014) suggests that corruption and economic mismanagement of revenues from mining projects may lead to the mining contributions being compromised and, hence, failure to address socioeconomic issues such as employment and poverty alleviation, thus eroding the value added by mining. Accordingly, perceptions of development may vary, as illustrated in Table 2.2.

Table 2.2 shows that development may be growth centred or, alternatively, be people-centred. Development may also tend towards the extreme of growth centricity where growth is perceived to being too detrimental for people. Growth-centred development focuses on macro approaches and on increasing national wealth as measured by GDP. The relationship between development and economic growth is captured in Table 2.2.

Table 2.2: Alternative perceptions of development and their interactions



More radical or extreme	A. Growth –Centred development		A. People –centred development	More radical or extreme
Ultra neo –liberal belief in growth at all costs	Primarily growth centred Macro approach	Middle ground of interaction and policy shifts	Primarily people centred Less Macro approach	Politically radical and anti-establishment
Survival of the fittest (social economic Darwinism)	Focus on increase in national wealth as measured by GDP	Some tensions but largely creative discourse and dialogue	Focus on improving quality of life with range of indicators beyond macroeconomic	negative to globalisation, and virtually all growth –centred values Grassroots activism; focus on ecology and human rights
Anti-state regulation and control	Represents mainstream economics approach Favours liberal market Economy and reducing state power		Represent more socially oriented aspects of development economics, with social anthropology approaches	
Negative to poverty, and environment issues	Believes technological advance will overcome threats to environment Poverty will overcome by growth		Accepts reality of globalisation but wary of effects on poverty Environmentally concerned	
		Common concerns include:		Represented by some radical international NGOs and range of grassroots organisations
Represented by much of global business interests	Broad represented by the World Bank and World Development Reports	• Sustainability • Democracy • Political stability • Pro-poor growth	Broadly represented by UNDP and Human Development Reports	
		DISCOURSE DIALOGUE Policy Formulation		

Source: Kirkpatrick *et al.* (2002)

2.5 Evolution and Development of Quasi Taxes in the South African Mining Industry

Oshokoya (2016) highlights the fact that the development of the mining industry is following that of other sectors that developed during the pre-colonial, colonial and postcolonial eras. The postcolonial era is characterised by resource nationalisation, which advocates for rightful sovereignty claims to share in mineral wealth. Quasi taxes are one way of expressing patriotism and the right to benefit from mineral wealth. This is done through the application of the MPRDA, which makes provision for quasi taxes and makes it compulsory for mines to implement them in mining projects.

Cawood and Oshokoya (2013) indicate that the concept of sustainable development has led to the re-emergence of the old concept of resource nationalism (RN).

They indicate that "these common elements indicate that resource nationalism seems to revolve around greater state ownership and control over national assets like mineral resources, which contribute to the international premise of national sovereignty over natural resources (NSONR), heeding earlier lessons on expropriation or nationalization of large-scale mining investments in the 1970s. in actual fact, resource nationalism can be defined as a *sovereign claim on resource assets by citizens of a mineral-rich country, in which this claim must deliver maximum benefits to them.* in doing so, it is conceivable that the implementation of resource nationalism has a range of policy options with extreme variations at opposite ends of the range. Currently, as in the post-colonial era, resource nationalism is gaining momentum globally, but there are more drivers than in the 1970s when it the trend was triggered as a reaction to colonization and high commodity prices".

This is the result of the perceived lack or absence previously of social benefit resulting from resources, which is a major consideration of the 21st century. This concept differs, however, from the RN of the 1960s and 1970s.

The current RN is understood in the context of a global search for the meaning of optimal mining, with RN now being considered within the context of sustainable development.[4] Sustainable development refers to the endeavour to ensure that mineral resource development is commercially and economically viable, meets market demands for minerals, contributes to an environmentally responsible society, benefits the social interests of its citizens, assures economic growth, and supports effective governance.

The country as the custodian of its minerals automatically translates to the nationalisation of its mineral assets. According to Oshokoya (2016), the South African legislation pertaining to mining taxation has gone through various eras, most importantly the colonial and postcolonial (post-apartheid in the South African context) eras. The postcolonial era was characterised by resentment and by resource nationalism. For example, during the colonial era, there was no notion of global economic development, but mining and other operations were conducted to enhance the fortunes of metropolitan nations and the companies they supported (Otto & Cordes 2002).

This section discusses the way in which quasi taxes developed from before the colonial era up to the post-apartheid period. This is presented in Table 2.3.

[4] **Sustainable development:** Development which focuses on contributing to the wellbeing of the present generation without destroying the potential for satisfying the wellbeing of future generations (as interpreted from the 1987 UN definition) (Cawood & Oshokoya 2013).

Table 2.3: The development and evolution of quasi taxes in mining

	Main Ideologies or and characteristics of the different eras
Pre-Colonial Era	According to Cawood and Oshokoya (2013), Communities mined their own minerals or obtained them from neighbouring communities through local trades,
Colonial Era	Colonial mining companies mining in the interests of their parent countries and not taking in to account the social –economic conditions of the countries they were mining in. They did not care for the environment and pollution associated with their mining activities. They were mining to develop infrastructure and appetite (demand) for natural resources in their parent countries. According to Ramonjha (2006), Colonial powers were mainly concerned with ensuring that companies from the colonial powers gain exclusive access to colonial territories.
Post-Colonial Era	According to Ramonjha and Oshokoya (2016), In the 1960s and 1970s the desire to increase control by previously colonised and mining states over the mining industry increased. Parastatal – Government companies mining on behalf of the country were replaced by private companies and mainly in the form of foreign direct investments (FDIs). This was however resulted from a socialist approach to mineral developments. According to Mtegha (2005), in 1988, approximately 45 percent of SADC mineral output was from state controlled facilities. Cawood and Oshokoya (2013) indicated that in the 1980s, companies started to disinvestment from this countries. The disinvestments lead to underdevelopment of their mineral resources coupled with failure of their state –owned enterprises.
	In the 1990s to date, there has been an evolvement and implementation of the concept of sustainable development and it is coupled with the perceived inadequate economic benefit despite commodities price booms which has led to greater participation by the state in the affairs of mining and a global search of the new meaning of resource nationalism. The current or another form of nationalism in South Africa is the Black Economic Empowerment and regulated contribution to local communities. The global crises and decline in the metal prices forced countries to seek a new way of attracting investors since domestic companies were no longer having adequate financial resources to undertake mining projects. This was supported by a technical report which was issued by the World Bank, which among other elements was indicating that the private sector should take the lead in mineral development with support from government and that environmental considerations, mine health and safety must be given serious considerations (Mtegha 2005).

According to Maponga and Maxwell (2001) in Mtegha (2005), the ownership of mineral production in Africa has gone through four stages during its history:

(i) Local private exploitation by traditional owners which was constrained by lack of capital;
(ii) Private foreign ownership, which was associated with large companies that exhibited enclave development that could not contribute to economic growth in the host economies;
(iii) State ownership that emphasised inward policies seeking to direct returns into socially and economically desirable objectives. This led to low economic performance from mining companies as a result of, among other things, political instability and a lack of technical skills; and
(iv) The current stage, which is characterised by private ownership.

This fourth stage is characterised by a more triangular relationship, with the parties having different objectives for the development of a mineral resource. Although these objectives differ, it is clear that the motives of all parties are economic (Otto & Cordes 2002).

Africa's economies were integrated into European economies because the former provided raw materials for the latter's industrialisation (Africa Mining Vision 2009). Subsequently, as a response to the call for sustainability and the promotion of responsible mining and the adjustment of past imbalances and inequalities in the country, the South African government developed a Mineral Policy which has as its main objectives of the promotion of ownership by historically disadvantaged South Africans (HDSA). Quasi tax can take a form of the development of a comprehensive financial programme that caters for sudden closure of mines in terms of the polluter pay principle. The policy also promotes the development of mining-affected communities, hence the evolution and formal application of these quasi taxes.

2.6 The Mineral and Petroleum Resources Development Act and the Mining Charter in Relation to the Quasi Taxes

Cawood and Oshokoya (2013) indicate that the Minerals and Mining Policy for South Africa (Mineral Policy) released in October 1998 outlined the 'resource nationalism' objectives of the country. The intention is 'to develop South Africa's mineral wealth to its full potential and to the maximum benefit of the entire population'. This Policy and the Freedom Charter served as the foundation for the Mineral and Petroleum Resources Development Act 2002 (MPRDA). The main objective of the Freedom

Charter was that national wealth and its ownership be restored and transferred to the people. This ideology fed into one of the main objectives of the MPRDA, which was to vest mineral right custodianship in the state and that all South Africans must benefit from the country's vast mineral resources.

This is also supported by Article 2(1) of the UN Charter of Economic Rights and Duties of the State, which grants to states full permanent sovereignty, including possession and disposal, over all its natural resources. Government therefore does not accept South Africa's current system of dual state and private ownership of mineral rights (Department of Minerals and Energy, 1998).

The minerals have accordingly been nationalised making the South African government the custodian of all mineral resources. Previously, the country used a dual system of mineral ownership. This change from the dual system of ownership to a singular system, where the state controls the ownership of mineral rights on behalf of the nation, has facilitated access to potential mineral rights on behalf of the nation. This has also helped to facilitate inclusive economic growth by involving new entrants to the mining and minerals industry (Mabuza 2016).

The state control of mineral rights resolves some of the difficulties involved in legal and administrative issues, and the delays caused by fragmented mineral rights holding structures. The system of state custodianship enables the state to enforce the submission and release of exploration information, thereby avoiding the duplication of exploration activities. It also helps prevent the hoarding of mineral rights and allows equal and equitable access to potential investors.

The MPRDA was promulgated in 2002 with the aim of:

- Recognising state custodianship of all mineral resources within the Republic of South Africa;
- giving effect to Section 24 of the Constitution by ensuring that the nation's mineral resources are developed in an orderly and ecologically sustainable manner;
- promoting investment, growth and employment in the mineral industry, thus contributing to the country's economic welfare; and
- promoting equitable access to the nation's mineral resources, especially among HDSA (provision of security of tenure to existing rights). Section 100 of the same Act gives effect to the Mining Charter, which caters for the enforcement of and

compliance with ownership (BEE) and contribution to communities. BEE was used to achieve a similar objective as government equity in mineral projects in other countries. This (BEE) has its roots in nationalisation and the promotion of equity, and the need to promote inclusive economic growth.

An assessment of the Broad-based Socio-economic Empowerment Charter Report shows that the Mining Charter has its roots in the Mineral Policy and is supported by the Constitution of the Republic of South Africa, 1996. The main elements catered for by the Mining Charter are housing and living conditions, procurement and enterprise development, employment equity, human resources development, mine community development, sustainable development, and growth in beneficiation (South Africa. Department of Mineral Resources, 2015).

From the aforementioned, it can be established that mine community development is one of the items catered for by the charter. Mine community development thus forms an integral part of quasi taxes; hence, it would appear that South Africa has relevant and adequate requirements to harness the revenues in this regard. This may also be observed in the proposed Mining Charter (a bill) which was announced in June 2017.

Each country must have its minimum community development requirements[5]. “This is an important option for policy makers to consider. By providing a sure and unambiguous income stream, there is a much higher prospect that Community Development Agreements (CDA) activities will be implemented, and also that the beneficiary communities will have a better understanding of funding levels, thus acting as a way to manage expectations. Such a provision also aids CDA negotiations because the funding requirement is set out in the law and is not open to negotiation. In discussions with industry, the author learned that many mines voluntarily expend around 2 per cent of gross revenues on Corporate Social Responsibility CSR programmes, but the amount is highly variable from project to project. Thus, a statutory requirement for CDA-related expenditure of around 2 per cent would probably not be considered as unreasonable by many mining companies” (Otto 2017). South Africa

[5] **Minimum community development** is the requirement that licence holder is to annually expend as a minimum amount on community development (including but not limited to expenditure on Community Development Agreements CDA activities) based on a specified percentage of its gross revenue (Otto 2017).

does not have the minimum community development standard or community development agreements that are regulated.

2.7 Mineral Rent, Mining Tax and Quasi Taxes in the Mining Industry

There are three main classes of taxes in the mining industry, namely direct, indirect and quasi taxes. This study focuses on quasi taxes. This section presents the evolution of the concept of quasi tax and throughout the evolutionary chain up to its acceptance and its practice in the mining industry. This section also links mineral rent as a branch of economic rent, mining tax as a branch of mineral rent, and quasi tax as a branch of mineral rent (Cawood, 2016).

In presenting the above, it is critical to understand how mineral wealth is created, as well as the nature of mineral rents (Tilton & Guzman 2016). Cawood (1999) indicates that economic rent is over and above what is required to induce investment. Otto and Cordes (2002) maintain that economic rent is measured by all the financial returns earned in excess of that needed to induce the firm's initial investment.

Otto and Cordes (2002) alternatively defined economic rent as the difference between the existing market price of a commodity and opportunity cost[6] of producing it. They summarise economic rent as a surplus, or a financial return not required to motivate the desired investment. However, Tilton (2016) has explained it as a surplus of income that can be taken away from firms and individuals without altering their behaviour. According to Cawood (1999), when the concept of economic rent is applied in the mining industry it results in what is referred to as 'mineral rent'.[7] This type of rent can take the form of direct, indirect or quasi taxes. Moreover, in some of the minerals taxation literature, the terms 'resource rent' and 'economic rents' are used interchangeably, but economic rents exist in all sorts of markets (International Council on Mining and Metals 2009).

[6] **Opportunity cost** is the reservation price or minimum amount owners of the commodity would be willing to accept. It represents all costs of production including a fair return to the investor (Otto & Cordes 2002).
[7] **Resource rents** defines resource rent as 'the excess of the total value (gross proceeds) arising from the exploitation of a deposit over the sum of all project costs including the rewards to each of the factors of production (International Council on Mining and Metals 2009).

2.8 What is Tax?

Artright (2016) defines tax as money that people and business firms are required to pay to a government and which is used for a public purpose. In South Africa, it is the money that people and companies pay through the South African Revenue Service (SARS) to the central government. This money is required for the provision of social services such as transport, education, international security, national security, healthcare, and welfare. Export taxes and other forms of taxes, such as corporate income tax from the natural resources sector, royalties, licences and income from state-owned mining companies, all contribute to commodity-related revenues (Mabuza 2016). Table 2.4 represents the percentage of contribution by mining taxes in South Africa.

Table 2.4: A summary of taxes affecting the mining industry in South Africa

Corporate Income tax (CIT)		Mineral Taxes	
Highest rate of CIT	28%	Mineral tax name	Mineral and Petroleum Resources Royalty (MPRD)
The level at which it is applied	Federal	Level	Federal
Rates of tax amortisation		Basis	Adjusted revenues
Ore assets		Rates	
Land / improvements		Copper	0.5-7%
Buildings		Gold	0.5-7 %
Plant and machinery		Iron	0.5-7%
Tailings		Coal	0.5-7%
Work and construction in progress		Deductible in CIT calculations	Yes
Restrictions on use of tax losses	Yes-level of tax limitation		
Special allowance / contracts			
Other taxes and payments		Withholding taxes	
Name	N/A	Dividends	10.0 %
Basis	N/A	Interest	N/A
Rate	N/A	Royalties	12.0 %
Tax on experts		Services fee	N/A
Ore extracted	N/A		
Processed ore	N/A	Any other payments	Licence fee
Refined metal	N/A	Fiscal stability agreements	NO
Other	N/A		
VAT charged on exports	NO	Additional in country information	

Source: PricewaterhouseCoopers (2012)

Venter *et al.* (2013) also indicate that taxes are levied in order for the government to provide services to the people. They also maintain that taxes are contributions to the state for the ultimate benefit of all who enjoy the privileges and protection offered by the state. A summary of taxes paid by various taxpayers in the 2012/2013 financial year is presented in Table 2.5 which illustrates that personal income tax amounted to R286 billion and is the highest of all the groups of taxes paid for the financial year of 2012/2013. Personal income tax was followed by VAT, which is paid by individuals and corporations when they purchase goods and services. A total of 25.4 percent or an amount of R826.4 billion was paid in VAT during the financial year.

Table 2.5: Source of the South African government income for the financial year 2012 /2013

Type of tax	Amount received R' billion	% of income
Personal Income tax	286.0	34%
Company tax	186.9	22.6 %
Tax on property	8.6	1.0 %
VAT	209,7	25.4 %
Fuel levy	42,8	5.2 %
Electricity levy	8,6	1.0 %
Excise duties	30,8	3.7 %
Customs	36,1	4.4 %
Tax on pay roll	11.1	1.3 %
Other	5.8	0.7 %
	826,4	100%

Source: Venter *et al.* (2013)

Tilton (2016) urges that governments have an obligation to capture these venues in order to obtain the financial resources needed to finance national defence, health, education, public safety and other public services. He maintains that mining companies (private sector) on their own cannot be the main financers of national defence, health and other services in that this could lead to market failures.

In the gazetted Mining Charter, the Department of Mineral Resources (*c.* 2016) has indicated that in the South African mining industry there was previously no tax base for contributing to local community development and labour-sending areas. Accordingly, companies will be taxed based on their annual turnover; that is, they will be required to pay a minimum of 1 percent of their annual turnover.

2.8.1 Taxes in Mining

Otto and Cordes (2002) state that there is no agreement on the categorisation of mineral taxes or on their labels. They found that different jurisdictions apply various names to the same or similar instruments and thus they have categorised the taxes into three classes based on how they influence company decisions. The three classes are direct, indirect and quasi taxes (Table 2.6).

Table 2.6: Tax instruments used in the mining industry

Direct taxes: *In personam* or profit based taxes	Indirect taxes-*In rem* and production based taxes
Corporate income tax	Royalty; unit based and value based
Profit tax on dividends	Sales and excise tax
Royalty based on profit/income measure	Payroll tax
Withholding tax on remitted dividends	Export duty
Resource rent tax	Import duty
	Value Added Tax (VAT)
	Application/issuing/registration fees and stamp duty
	Land rents
	Property tax
Quasi taxes-Additional taxes	
Foreign exchange control	Government equity-state participation
Contribution to communities	Performance bonds and levies for an Environmental fund

Source: International Council of Mining and Metals (2009)

Direct taxes

These are taxes that are imposed *in personam* on the mining company as a legal entity. They are usually based on aspects such as income, revenue or profits. These taxes are progressive because they are based on the ability of a company to pay. This category includes proportional income tax, resource rent taxes, additional profit taxes, dividends, withholding taxes on dividends and interest payments and royalty based on profit. These taxes are the most preferred by companies.

Indirect taxes

These are taxes that are imposed *in rem* on the mineral deposit. They are paid by the mining company, but they are indirectly based on the mineral deposit or the inputs to mine or exploit the deposit. The most common indirect taxes are those that affect the project's variable cost or, equivalently, realised market prices. The group of taxes that fall into this category are specific royalties, unit royalties, *ad valorem* royalties, severance taxes, export duties, sales taxes, and VAT.

These taxes are regressive, since they are not based on the ability of a company to pay. This type of tax is preferred by governments rather than companies and is

believed to discourage mining investments or that it may lead to divestment. These taxes are further grouped into how they influence costs.

For example, the severance taxes *or ad volorem* royalties are based on the value or volume of production. As the Davis Tax Committee (2015) states that it is of great importance that a tax system is designed in a fashion which promotes growth and investment or, at the very least, does not impede such growth. The principle of tax neutrality suggests that investment and production decisions for a resource project should not be adversely affected by tax.

Indirect taxes are costs that do not form part of direct taxes and are borne by a mining company or its shareholders (United Nations Development Programme 1992). These costs do not include capital, operating and working capital costs. They do, however, include but are not limited to, foreign exchange regulations, shareholder tax, local development, levies to mineral owner, carried interest equity, free equity, contractor selection, requirements to use local services and goods, contractual payment resulting from the awarding of rights by government to a non-mining company, performance bonds, secondment, and landowner compensation. However, for the purpose of this study, only the list provided by Otto and Cordes (2002) will be used.

Quasi taxes

Otto and Cordes (2002) indicate that contributions to local communities, foreign exchange control, environmental taxes and performance bonds are classified as quasi taxes. Quasi taxes such as environmental provisions and contributions to communities have been supported and endorsed by the promulgation of the MPRDA in South Africa. Subsequently, there has been a clear increase in these contributions or taxes. Otto and Cordes (2002) also define quasi taxes as near taxes. Quasi taxes, as with other taxes, may share similarities internationally but they differ from country to country, depending on the need and objectives of the country involved. These taxes include foreign exchange controls, government equity, environmental taxes, performance bonds, and contributions to local communities. Maxwell and Gui (2006) claim that the traditional quasi taxes that were listed in the Australian mining industry include and are not limited to rail freight rates, pipeline licence fees, export levies and government equity. Another form of traditional quasi tax is the cash bidding for exploration.

For the purpose of this study, only foreign exchange controls, government equity, provisions for social and labour aspects, performance bonds, and environmental taxes will be considered. According to Otto and Cordes (2002), these taxes are captured to achieve the objective of rectifying market failures. Governments also require that companies internalise the revenues for environmental aspects and the socioeconomic problems experienced by society.

According to Otto *et al.* (2006), the tax system must not isolate other forms of taxes, or concentrate on only some parts of the system. It should instead consider all the taxes, because they all exert a tax burden as a system and not as an individual tax. There is no ideal international tax system, but governments design these systems based on their objectives and needs, according to the conditions in their countries. An example is the BEE in South Africa. This kind of compulsory transaction (quasi tax) cannot be undermined, considering the history of the country and the expectations of various stakeholders. This section indicates why and how these costs (foreign exchange control, government equity, environmental taxes & performance bonds and contribution to communities) are regarded as quasi taxes.

Foreign exchange controls

Foreign exchange controls are measures that include foreign exchange losses and transactions and which are put in place by countries. This kind of cost reduces a company's profits and happens mainly in countries where the local currency is either not readily tradable at realistic rates of exchange, or is not tradable at all (Bergin & Sheffrin, 2000).

According to Park and Matunhire (2011), foreign exchange controls are considered to be part of country's risks in the calculation of a risk score for mineral development. They also indicated that other risks include technical and political risks in the determination of a discounted cash flow for mining projects. The risk calculation contributes to the risk-adjusted discounted rate, which ideally ranges from 7.2 percent to 21.2 percent. The risk-adjusted discount rate is the risk-free rate of return plus the risk premium. This includes the risk-free rate of return – for mineral development projects, it is advisable to use a ten-year bond that yields 1.2 percent. The risk premium can range between 6 percent and 20 percent. They have developed a table which categorises all the elements that are considered under the discounting rate into economic costs, political risks and others indicated in appendix A. Political risks include

the environment, tax, nationalisation and currency convertibility. Under economic risks there is price, demand and foreign exchange convertibility. It is significant that a country be aware and minimise these risks, since they are very critical for investors.

How investors perceive this quasi tax has a bearing on the contribution to disinvestment or investment. These taxes must bear the characteristics of a gold-mining tax regime. Foreign exchange controls are regulated in terms of the International Trade Administration Act, 2002 (Act No. 71 of 2002). The objective of the Act is to foster economic growth and development, to raise income and promote investment and employment in the country and within the common customs area. This is done by establishing an efficient and effective system for the administration of international trade, subject to this Act and the Southern African Customs Union (SACU) agreement.

For economists to measure the exchange rates in exchange markets that are allowed to float, they use (i) the nominal rate of exchange, which can be defined as a bilateral exchange rate; (ii) the effective exchange rate (EER), which is a multilateral exchange rate; and (iii) the real exchange rate (RER).

The real exchange rate can be expressed by Equation 3: (Griffiths and Wall, 1999)

$$\mathbf{RER} = (\mathbf{EER} \,.\, \mathbf{P}\,(\mathbf{RSA}))/\boldsymbol{P}\,(\boldsymbol{F}) \quad \text{[3]}$$

Where EER = Effective Exchange rate

P (RSA) = price of South African goods, and

P (F) = price of foreign goods.

The price of foreign goods (P [F]) is used, not to assess how the currencies are trading, but to measure the rate at which home goods are exchanged for goods from other countries (Griffiths & Wall, 1999). According to Copeland (2014) and Griffiths and Wall (1999), the greater the value of the real exchange rate, the greater the country's current account. According to Lee and Chinn (2002), temporary shocks have no long-run effect on the RER.

Copeland (2014) describes the exchange rate as a price and that the prices themselves are exchange rates. Burton and Lombra (2006) define the exchange rate as the number of units of foreign currency that can be acquired with one unit of domestic money (Rand). In other words, the exchange rate specifies the purchasing

power of, say, the Rand in terms of how much it can buy of another currency. Burton and Lombra (2006) also indicate that exchange rates, foreign currency and international finance are unavoidable in the global economy. The significance of exchange rates cannot be underestimated in an open economy such as that of South Africa in the space of globalised modern businesses, continuing growth in world trade relative to national economies, the trend towards economic integration (excluding the Eurozone), and the rapid pace of change in the technology of money transfer.

Otto and Cordes (2002) explain that in the past, foreign exchange controls were observed in developing countries, where companies were expected to surrender their foreign earnings to the central bank (such as the South African Reserve Bank). The variance between buying and selling rates can be seen as a small tax with associated transaction costs. This was not always a smooth transaction. It became an impediment for investments in other countries and therefore hindered potential economic growth.

Sithole (2008) points out that relaxing foreign exchange rules improves a country's economic growth. When interest rates are high, the incentive to save is greater, and vice versa. Another fact is that the higher the interest rate in an economy, the greater the cost of capital and hence this has an impact on prospective investors, which may affect potential mining investors, leading to missed economic growth through mining.

Oshokoya, (2016a) highlights that foreign exchange rates have a direct relationship to economic growth, since they have a relationship to saving and investment rates ofthe country (Oshokoya 2016). South Africa is characterised by an open economy and the relationship between accounts is represented in Figure 2.4.

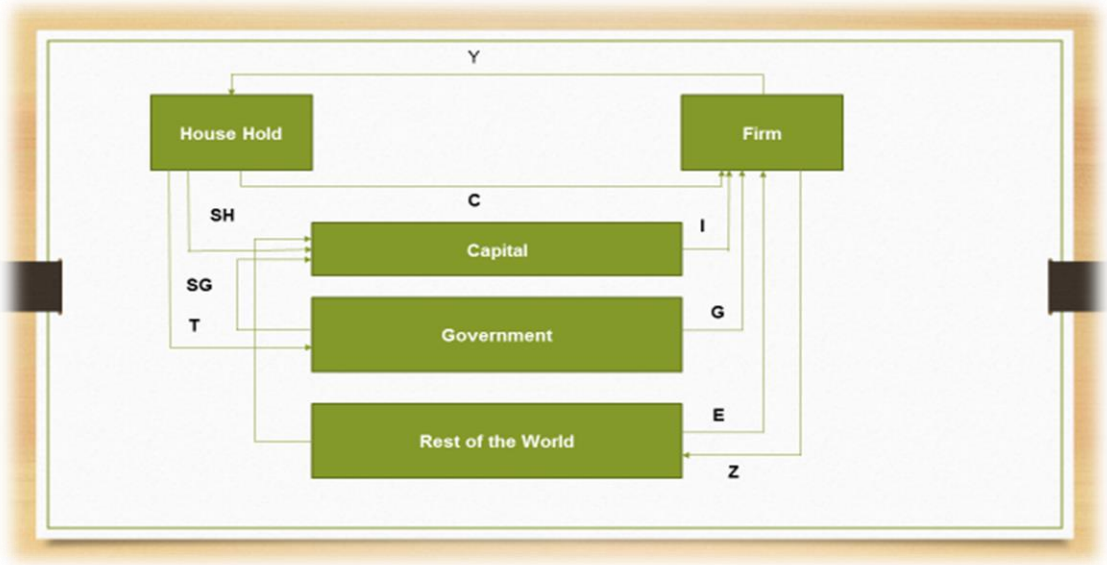


Figure 2.4: An open economy with government savings, and investments

Source: Reinert (2012)

Figure 2.5 is presented in order to establish the relationship between government, mining companies and communities. C is the consumption expenditure that accrues to the firm, Y is the income (wages, salaries, and payments for the use of property assets), SH is the household savings (second expenditure), government expenditure (government spending and government savings [SG]), total exports as E. Capital has a single expenditure I, which is the funds provided to firms for investment purposes. The total imports are denoted by Z and foreign saving, which is the expenditure that accrues to capital, is denoted by SF. Household and government savings are equal to domestic savings.

It was established that foreign exchange controls and their application have a direct link to national income; hence, these controls must be understood, since they are integrated in the subject matter. For the country to benefit from foreign exchange, the affected government department (national departments) must design ideal policies, principles and legislation that promote both local benefit (for businesses) and foreign investments in mining. If this is not done, it could lead to missed opportunities, which will, in turn, lead to missed economic growth. This applies to aspects such as capital and other expenditure and procurement.

As long as financing a mining project in South Africa is not seen as being as competitive as in other countries, most mining companies will continue to invest

elsewhere, thus leading to South Africa losing potential investments, which have a direct link to potential economic growth. The control of foreign exchange must be done in a way that will promote savings or resultant Net Present Values (NPVs) and increase investment rates. This will lead to economic growth, in line with the determinants of economic growth. This is because investors are mainly interested in the NPV and the internal rate of return (IRR) of projects. Maxwell (2006) indicates that the IRR is the discount rate at which the NPV becomes zero, which is also the measure of a project‘s return on equity. This can also be explained as the measure of return per Rand invested in a project.

Mminele (2017) indicates that some emerging-market countries have implemented measures such as taxes on the purchase of domestic fixed-income securities and equities and pre-announced currency market intervention programmes, to limit currency appreciation and build foreign exchange reserve balances. However, South Africa regards these interventions as irrelevant for its markets.

It has been mentioned that the South African foreign exchange market is characterised by two main types of participants, namely banks authorised by the South African Reserve Bank to deal in foreign exchange, known as authorised dealers, and brokers (Commission of Inquiry into the Rapid Depreciation of the Exchange Rate of the Rand and Related Matters 2001). South Africa is liberal on foreign exchange control rules. The aim of being liberal is to promote economic growth, alleviate poverty by narrowing the gap in living standards, raising investment by supplementing domestic earnings, deepening domestic capital markets and increasing growth with a more efficient allocation of resources among competing projects.

It is also important to note that the open economy of the country is, to an extent, a negative factor in the decline in the foreign exchange rate, and that there must be a means for taking advantage of the capital inflow by adopting or continuing to implement gradual liberalisation of foreign exchange controls, based on a set of key policy and structural requirements, including

- creating the appropriate macroeconomic fundamentals;
- establishing a sound and well-regulated financial system; and
- implementing a flexible exchange rate to act as a shock absorber against global developments.

Booysen (2017) indicates that recent developments in terms of the relaxing of regulatory controls on foreign exchange have opened up more ways for the raising of capital through the Johannesburg Stock Exchange (JSE), than there were in the past. Sunley and Baunsgaard (2001) indicate that if there were no special treatment for import duties, these would be an attractive way for the government to secure an upfront revenue stream. Given the substantial import needs, particularly during project development, this revenue is typically even more frontloaded than royalty payments. For the same reason, duty exemptions are highly attractive to investors in that they can also be sought as a way to minimise dealings with customs officials, where foreign enterprises with substantial import needs can be an easy target for rent-seeking behaviour.

Cordon and Neary (1982) in Otto & Cordes (2002) explain Mankani's empirical conclusion that an open economy model (South Africa also has an open economy system) traces the domestic economic impacts of export instability over the boom cycle. They found that rapidly increasing foreign exchange earnings lead to an increase in domestic income, and an increase (appreciation) in the country's nominal exchange rate. The later results in a rising real exchange rate as a result of domestic inflation (often defined as the reduction in relative prices of tradable goods), compared to the prices of non-tradable goods and services. This will result in the decline of the production of tradable commodities and potential investment in new tradable commodity sectors is discouraged, because they become less competitive and since non-tradable sectors tend to become more labour intensive, wage levels will rise and returns to capital will decrease. The latter will impede domestic capital accumulation.

This is referred to as Dutch disease (as indicated in Chapter 1) which occurs ~~is~~ when there is a sharp inflow of foreign currency resulting in a collapse in export earnings, thus distorting the economy.

Government equity

Sunley and Baunsgaard (2001) indicate that government equity in mining projects takes the form of more direct government participation in a mining project by taking an equity share. Equity participation can take several forms, including: (i) paid-up equity on commercial terms, which places the government on a similar footing to a private investor; (ii) paid-up equity on concessional terms, where the government acquires its

equity share at a below-market price; (iii) a carried interest, where the government pays for its equity share out of production proceeds, including an interest charge; (iv) tax swapped for equity, where the government's equity share is offset against a reduced tax liability; (v) equity in exchange for a non-cash contribution, for example by the government providing infrastructure facilities; and (vi) free equity, which is somewhat misleading, since even the non-cash provision of equity usually results in some more or less transparent off-setting reduction in other taxes.

These can relate to nationalistic sentiment, to facilitate transfer of technology and expertise, or to provide more direct control over project development. For example, BEE or the HDSA in South Africa share similar sentiments to government equity in mining projects. Although this is not common in South Africa, a similar tax is the requirement of a 26 percent shareholding by HDSA, which takes the form of BEE with the aim of eradicating past imbalances and promotion of equity. The equity can also be in the form of community, employees or staff share-holding.

The Davis Tax Committee Interim Report (2015) indicates that although the money is not paid directly to the government, the transfer of equity stakes in business to the historically disadvantaged groups of South Africa is considered as tax, since the transactions are compulsory. The latter is included in section 2.3.1(iii) of the *White Paper* (Mineral and Mining Policy for South Africa). It is also contained in the preamble to the MPRDA and as a reaffirmation of the Act.

The White Paper stipulates this equity as compulsory, making it difficult to ignore during mine planning. Another cost associated with this policy is the free carried interest, because it carries similar costs to taxes. This has been the conventional quasi tax similar to the rail freight rates, pipeline licence fees and export levies that have been taxed in Australia (Maxwell & Gui 2006).

Environmental taxes and performance bonds

According to Otto and Cordes (2002), environmental taxes and performance bonds are costs imposed by governments as guarantees, or bonds, against mining activities that lead to pollution and negative environmental activities. It is a performance agreement or performance bond that is used for any unplanned closure by the mines, or an exploration company. In South Africa, these are bank guarantees or bonds with insurance companies and banks, where a mining company must pay a certain percentage every month to secure the relationship between the authorities, the bank,

the company and even other affected and interested parties. Performance bonds are, however, not commonly used in South Africa.

These costs are however considered as legitimate costs of production. Companies are no longer allowed to abandon non-rehabilitated land, because there is increasing pressure from political spheres and physical requirements from around the globe. In South Africa, a direct environmental tax has not yet been introduced so these are still quasi taxes. In the Philippines, this tax is based on the amount of tailings a company produces. In China, this tax is paid to the landowner and is measured against the potential productivity of the agricultural land.

Responsible mining companies prefer to incorporate quasi taxes (be it environmental technology, hiring a consultant, or technical mitigation of an impact) and environmental costs and considerations in their mine design with the aim of minimising the costs that they would incur should the rehabilitation be forcefully implemented. Complying with the payment of these costs by default results in mining companies receiving acceptance from the communities in which they are operating. This tax also enhances the company's public image and results in the company being recognised as a socially responsible enterprise (Rudawsky, 1986).

According to Gocht *et-al* (1988), environmental costs reduce the NPV of a mining development which, in turn, negatively affects the investment climate in a country. These costs are incurred by (i) technical requirements such as scrubbers on smelters to reduce gas emissions; (ii) increases in the time spent on non-mining activities, such as specialist studies affecting the time value of money; and (iii) environmental regulation which is often conducted by government agencies, leading to discretionary authority. The above all result in some form of cost to the project. This is because they are considered to be regulatory costs or legitimate costs throughout the world. In South Africa they are regulated in terms of Regulation 11(1) (g) (iv) of the MPRDA.

According to Tilton and Guzman (2016), when governments impose environmental taxes, one of the objectives is to have less pollution and environmental degradation. This is because companies will minimally pay these taxes; they normally turn to chasing output and do not focus on reducing pollution and environmental degradation. The rationale for introducing environmental taxes may differ from country to country and ranges from raising revenue to reducing environmental damage, or even recovering infrastructure costs. In most recent tax reforms by governments, generating

government revenue is the major rationale for implementing environment-related taxes. The major tax pertaining to environmental taxes relates to energy use (Organisation for Economic Co-operation and Development 2017).

The environmental costs falls within regulatory cost within a cash flow and they are regulated in terms of regulation 11 of the Mineral and Petroleum Resources Development Act, Act 28 of 2002. These costs are regulated in terms of Regulation 11 (1) (g) (iv) under regulatory costs. The relationship of these costs in relation to the others costs is illustrated under Table 2.8 in page 707, which is an extract of a detailed cash flow guideline which can be used as a regulatory tool for planning and forecasting of mining investments. These costs are mandatory and their extraction is regulated.

Environmental regulations affect the economic viability of mining projects in the following ways:

(i) Increasing the costs of storage and materials (inventory), thereby raising mining and mineral processing costs by requiring, for example, scrubbers on smelter smokestacks that reduce the amount of sulphur dioxide emitted into the air, or plastic liners at the base of tailings ponds that minimise the release of toxic heavy metals into the adjoining ground and surface water. Table 2.8 provides more information on this and outlines how taxes must be regulated and catered for in mining development. Table 2.8 also provides a guideline for the compilation of a Mining Work Programme (MWP) in South Africa;

(ii) Increases the time spent on non-mining activities, such as conducting environmental baseline studies, filing environmental impact statements, and applying for mining permits and waiting for approval. Corporate social responsibility and sustainable development would be included as requirements when applying for mining permits. These fall under the regulatory costs within the MWP. Again, this is referred to in Table 2.8;

(iii) Forming part of (have a bearing on) the calculation of the risk-adjusted discounted rate (Park & Matunhire 2011). More information on this is provided in Appendix A.

The environmental costs also are beneficial to mining companies since they assist with environmental clean-ups.

Contribution to local communities

Local communities adjacent to mining operations inevitably tend to experience changes in terms of their social and economic structures and attributes. The Constitution of the Republic of South Africa, 1996, the Mining and Minerals White Paper of 1998 and Section 100 of the MPRDA together represent South African government interventions to improve social cohesion and transform the mineral industry to, among other things, (i) provide for requisite training and skills development, to not only transform the industry but to ensure that it grows sustainably and competitively, and (ii) contribute to the eradication of enclave development through community development dedicated to host communities and major labour-sending areas (South Africa. Department of Mineral Resources, 2015).

There is thus advocacy from interested and affected parties (I&APs) for social licensing or social and labour plans to be part of the mining rights. The Social and Labour Plan (SLP) deals with socio-economic aspects of the operation. This is a document with the objective to leverage the economic structure and social issues of the affected communities, even after mine closure. It integrates the mining communities into the broader community.

Mining is undoubtedly a controversial industry with respect to diversity and social management. However, there is no greater threat to the environment than poverty (Solomon 2014). South Africa has an SLP with its main objectives, among others, being to promote equity and contribute to communities. The contents of the SLP present all the elements of socio-economic concerns in communities affected by mining. The financial provisions made under section 8 of the guidelines on SLPs are provided for in the main financial plan, namely, the cash flow statement of the MWP in terms of section 11(1)(g)(viii) of the MPRDA. In South Africa and in terms of the MPRDA, it is compulsory to include it in all financial models of any mine project. The elements that are covered by the Social and Labour Plan document are, among others, Human Resource Development (Human Capital), Employment Equity Plan , Mine Community development , measures to address housing and living conditions, processes pertaining to management of down-scaling and retrenchment, and financial provision (amounts to implement the above). This is represented by Annexure A.

The annexure deals with both the negative and positive effects of mines. SLPs help in limiting and, where possible, stopping the negative effects of mining operations and in integrating the positive impacts in the communities affected by these operations.

Mining companies are expected to make provision for all of these from their revenues, which in the end affects the profits and the NPV of projects.

There are several state-of-the-art or best-practice guidelines on the implementation of the SLP and mining companies' contribution to local communities, such as the International Council on Mining and Metals (ICMM). Since the report of the Brundtland Commission in the 1980s, financial transparency and payment of the social and environmental costs of land rehabilitation have become prominent issues, particularly for multinational companies. The equity principles of the Extractive Industries Transparency Initiative (EITI) are some of the recent developments that encourage or force mining companies to comply with the above. Most of the major mining companies spend around 0.5 to 1.5 percent of their budget on SLPs and Corporate Social Investments (CSI). In monetary terms, these are in the region of R70 million (Solomon 2014).

This study proposes that there is a need to investigate the benefits resulting from the revenues of mining developments, since spending alone might not lead to economic growth. However, there are procedures and processes to be followed to realise economic growth from mineral assets.

2.9 Main Principles to Be Considered When Designing a Tax Regime

Maxwell and Gui (2006) indicate that the most important consideration for taxation is the tax base and the tax rate. The tax base is the entity from which tax revenue is collected, while the tax rate is the proportion applied to the base to project mineral revenue earnings. Ideally, when considering the mineral sector, the base should be the annual turnover derived from the mining activity and the tax rate should be the optimal rate at which taxes are shared between the government and the mining company.

Tax levies may either be progressive, proportional or regressive. However, regressive taxation is not practised in South Africa. The regressive tax rate decreases with an increase of a person's income. Proportional tax is levied at a fixed rate on the amount of income earned, while progressive tax is the tax rate as determined by a person's income, which implies that the more income that person receives, the more tax he will pay (Venter *et al,* 2013). The above can only be achieved when there is neutrality, efficiency, equity, clarity and stability associated with the capturing of these taxes, as indicated by Otto and Cordes (2002).

Venter *et al.* (2013) also indicates that the historic economist, Adam Smith, established as early as 1776 in his work, *The Wealth of Nations,* that the levy of tax should comply with certain basic attributes, which he proposed were equity, certainty, convenience and economy. All the other attributes mentioned above share the characteristics of the modern schools of thought and, for the purpose of this work, the economic characteristics will be added to all the attributes advocated by various sources. Quasi taxes must , since they are in fact taxes, always have the attributes as summarised in the following subsections.

2.9.1 Neutrality

According to Westin (1992), a tax system must focus on only tax issues and not interfere with transactions that would occur in the absence of a tax system. Otto and Cordes (2002) further indicate that neutrality is one of the important characteristics of a good tax system. The more neutral the tax system, the less impact it will have on pre-tax ordering of expected returns among the variety of returns.

The Davis Tax Committee Interim Report (2015) supports neutrality and indicates that mining taxpayers should be taxed at the same rate as non-mining taxpayers. According to this report, the neutrality of a tax system counteracts bias, attracts ideal investments and does not affect production. Partial application of the neutrality principle may affect FDI and prevent local investors from investing in mining and therefore limit the potential economic growth from mining investment.

2.9.2 Equity

According to Otto and Cordes (2002), the equity principle recommends fair and equitable tax burdens among taxpayers. Westin (1992) states that equity is categorised into horizontal and vertical equity. Vertical equity requires that persons with greater income should pay more than their counterparts with less income, while horizontal equity requires that people who share similar economic situations must be treated the same. This type of equity is more associated with the ability to pay than any other requirement. It is therefore very close to the neutrality principle and the efficiency principle. It has the advantage of enhancing the management of firms and organisations.

2.9.3 Clarity

Clarity in tax rules reduces confusion for taxpayers and government officials and it encourages efficiency and non-arbitrary administration (Otto & Cordes 2002). This is because taxes without clarity might compromise monitoring, evaluation and enforcement since there will always be a leeway, which will affect how they are attended to by both government officials and mining companies.

2.9.4 Stability

Instability and frequent adjustments of policy documents affect both companies' decisions and government's interests. Government must minimise or completely avoid changing policies and tax rules as a result of ill-advised incentives or penalties, because it affects investments in the mining sector (Otto & Cordes 2002). In cases of instability with regard to tax rules, companies will raise the required rates of return when evaluating the projects (Westin 1992). This means that tax rules must ensure consistency and certainty for investments, thereby enhancing investments, which will ultimately increase the potential for economic growth.

2.9.5 Efficiency

The Davis Tax Committee Interim Report (2015) advocates for administrative efficiency. This includes the efficient allocation of resources at both the macro-economic and global levels. According to Otto and Cordes (2002), to achieve social, political and economic objectives, governments must be efficient and attract FDI to gain foreign exchange earnings. To measure the standard of this attribute, one must measure it in terms of how resources are allocated in light of the stipulated national policy objectives, including those that encourage macro-economic stabilisation and growth.

2.9.6 Other requirements of a good tax system

Other elements of a good tax system include, but are not limited to, simplicity and flexibility (Davis Tax Committee Interim report, 2015). Westin (1992) further lists targeting and administrability as other elements of a good tax regime.

According to Venter *et al.* (2013), economy is one of the characteristics of tax levies which was proposed by one of the pioneers of the subject of economics, Adam Smith. He suggested that every tax must be minimal for the contributor to pay, but must still be sufficient to provide the treasury of the state with the amount the state requires.

Venter *et al.* (2013) also argue that, in the modern context, the characteristics of tax should also include the broader principle of social justice.

2.10 Current Applications of Quasi Taxes in the South African Mining Industry

The quantification of the cost of mine closure is not an exact science, even when considering the longevity of mining operations. It is therefore always difficult to project an ideal amount for closure rehabilitation. Mining companies incur secondary costs in the case of any other hidden or unquantified closure cost. In terms of unquantified closure cost, a company is expected to have an additional insurance policy or bank guarantees must be used (Ngowi *et al,* 2002).

The trend in South Africa, in terms of provision for rehabilitation of mining-affected areas, is mainly the use of bank guarantees, rehabilitation trust funds and cash deposits to the departmental account. Rehabilitation trust funds are usually administered by a third party or a financial institution and must be registered through the South African Revenue Services (SARS) with a trust deed.

The Department of Mineral Resources expects companies to submit the documentation to the Department. The amount in the trust fund is ring-fenced and can be cashed and used only for rehabilitation by mining companies.

Mining companies are required to provide for financial provision of a financial guarantee from a bank registered in terms of the Banks Act, 1990 (Act No. 94 of 1990), or from a financial institution registered by the Financial Services Board as an insurer or underwriter. This financial provision should then be deposited into an account administered by the Minister responsible for mineral resources, or as a contribution to a trust fund established in terms of applicable legislation, on condition that:

i. this may not be used for the financial provision required in terms of regulations 6(a) or (b) or regulation 11(1)(a) or (b); and
ii. this may not be used by an applicant for, or holder of, a mining permit in terms of the Mineral and Petroleum Resources Development Act, 2002.

The financial guarantee contemplated in sub-regulation (1)(a) must be in the format set out to cater for any risk related with the financial provisions (Department of Environmental Affairs 2015).

The mining company must pay some percentage to the bank which has provided the guarantee. Such costs must be forecast in the MWP. The trust fund is more ideal and

more user-friendly, since the company can cash in the amount after closure (in case there are some liabilities) and then use it for rehabilitation.

On the other hand, the bank guarantee can be submitted to the authorities only, and cannot be cashed for rehabilitation as with a trust fund account. Therefore, the company must still source finances for rehabilitating any liabilities that might remain after closure of the mine. This results in the mine's servicing a bank guarantee, by paying some annual fee to continue the relationship with the bank, the authorities, and the mine.

According to Thobatsi (2014), in South Africa, Local Economic Development projects that have been approved with the SLP must also be supported by the local municipality's Integrated Development Plan (IDP) Mineral Resources (2015), whereby companies are expected to make financial provision for the implementation of the Social and Labour Plan (SLP) and this is regulated or catered for by the guideline on SLP compilation. This is reflected in annexure A.

2.11 The Extent To and The Manner in Which Quasi Taxes Affect Mining Investment Decisions

According to Otto and Cordes (2002), the effects of taxation are derived from the way they influence company decisions in either the short term or long term. Equation 4 is an expression used to examine how firms may view any possible investment opportunity. The equation comprises three terms: CF_t represents estimates of the difference between production revenue and operating cost in a given year. This is used to measure the expected total net operational revenues from the project when it is summed over the anticipated Life of the Mine (LOM). The firm will estimate its tax burden (T_t) based on the existing tax rules from annual (and total) net operational revenues as indicated above. K_t measures the exploration and development costs incurred by the firm prior to operations. A company will usually expect to recover this amount during the operational phase, based on the tax rules of the country.

The numerator represents a firm's annual accounting profits or losses, which equates to economic profits in nominal terms from the mine. From the equation, it can be observed that there is recognition for the time value of money. Future income is discounted to measure the current or present value of mining projects. The same applies to expenditure in previous years where it is capitalised or increased to express its true current or present value. The term *r* performs this function by converting expected nominal future income and prior expenditures to their real present value at a

given time. The higher (lower) the discount rate applied to any level of future income, the lower (higher) its present value. This means that a discount rate of 10 percent will yield a lesser Net Present Value of a project to a Net Present Value of 9 percent for the same project. The higher (lower) the discounted rate applied to previous expenditures, the higher (lower) its present value. The relationship has several crucial implications for the investment equation and for taxation policy.

$$\boldsymbol{NPV} = \sum_{\boldsymbol{t=0}}^{\boldsymbol{n}} \frac{\boldsymbol{FC_t - T_t - K_t}}{\boldsymbol{(1+r)^t}} \quad \text{..... [4]}$$

NPV = expected net present value of a project (mine)

CF_t = expected gross cash flow in a given year

T_t = estimated tax burden in any given year

K_t = capitalised value (in base year) of front-end expenditures for exploration and mine development

r = risk-adjusted required rate of return

t = year from base year to *n* (where *n* represents mine life).

The acceptable way to scrutinise tax burden (T_t) is by using all taxes in a country and considering the whole mining (mineral) tax system, be it direct tax, indirect tax or quasi tax. South Africa must apply all the characteristics of a good tax system (efficiency, equity, clarity, stability, and neutrality) to all taxes that are applicable to the mining sector. South Africa is currently experiencing a challenge with the fourth element (stability) when considering its tax regime in respect of quasi taxes.

When determining the tax burden, environmental costs are accounted for in the equation as part of operational and development costs and therefore they directly affect CF_t. The higher they become, the lower the value of the expected economic profits. Environmental costs are deducted from the revenues to determine the tax base.

According to Otto (2013), a rising tax rate undermines the incentives for companies to carry out exploration, to develop new mines and even to maintain those that are

operational and may be large enough to continue production. On the other hand, insufficient taxing of the private sector is also not ideal, since it leaves the state with less tax benefit flowing from mining and production. Hence there must be a balance between the two. The balance between the two will only exist if there is an effective tax rate.[8]

The government can receive its benefit from mining by using taxation, or in the form of non-pecuniary measures. Non-pecuniary measures can be in the form of transfer of skills, technology or other non-financial benefits. A pecuniary contribution may be voluntary, or may be imposed by governments in terms of which companies are expected to build infrastructure for communities, schools and social services in the areas surrounding the mines.

These kinds of pecuniary quasi taxing also contribute to the determination of an effective tax rate and must be adequately considered by the different interested and affected parties. Effective tax rate is calculated using Equation 5.

$$Effecive\ Tax\ Rate = \frac{\text{value of all amounts paid to government}}{\text{value of the project before}-\text{tax cash flow}} \text{..... ..... [5]}$$

The more the government imposes such pecuniary means of extracting value from the asset (mine), the higher the production cost for the company and the less the government can benefit from tax, because it erodes the optimal level of taxation. The government may impose pecuniary measures by forcing local beneficiation and employment of domestic employees.

Figure 2.5 represents the way social licensing can affect investors' return and distributable rent.

[8] **Effective tax rate:** A measure of "Government Take" expressed as a percentage of the effective net cash flow, of all amounts payable by the company to the government (Otto 2013).

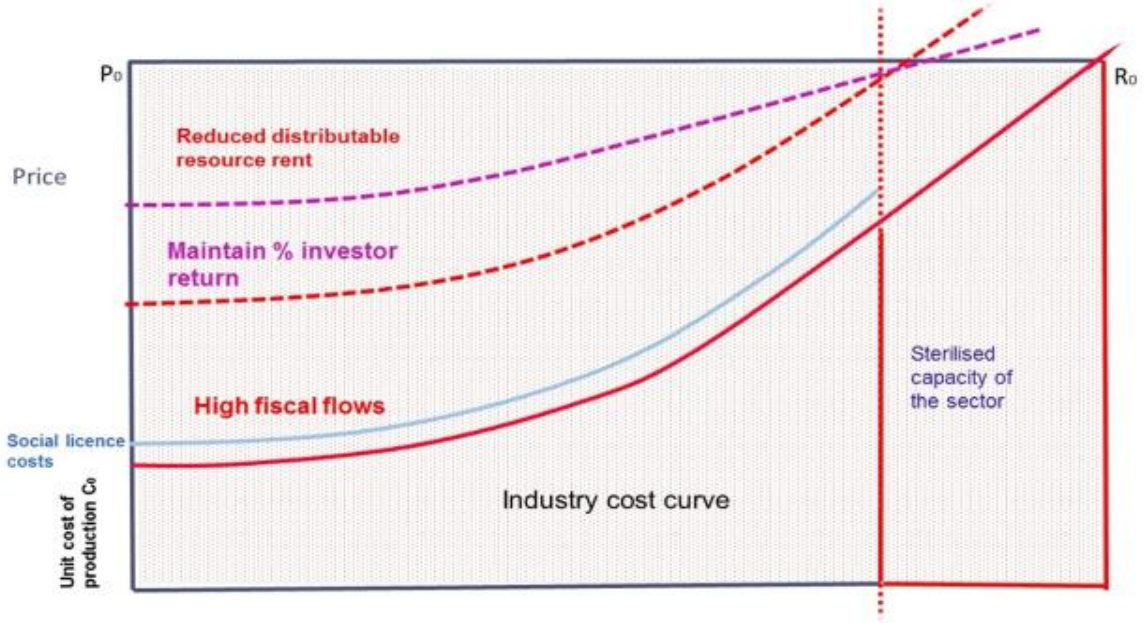


Figure 2.5: The impact of higher levels of taxation on distributable resource rents.

If well implemented and designed in consultation with affected parties, the implementation of the measures assist in realising the real value of the mineral asset. According to Otto and Cordes (2002), in most countries these costs cannot be considered as an integral part of the tax basis, since they may not be considered together with development or operational expenditures, but rather in isolation. Countries are, however, considering these compulsory provisions to be deductible and require them to be supervised by public entities.

There are growing and ever-changing demands in terms of the distribution of tax revenues in different communities, which might lead to uncertainties with investors. Stability is one of the most important characteristics in attracting investment to the mining industry, which might subsequently lead to economic growth. The current study is not, however, against people demanding their rights from the mines close to their communities, but it does maintain that this should be done using the SLP and the other provisions of the MPRDA, and related Acts and policies.

The distribution of quasi tax revenues may contribute to negative economic growth if stakeholders are not adequately or procedurally involved in the planning and implementation of projects. Other countries annually facilitate negotiations over which expenditure can be considered tax deductible for social investment and community spending (Daniel *et al,* 2008). However, this is not the case in South Africa. This

supports the fact that government (mineral) regulatory departments can and should work together with mining companies to achieve economic growth.

This study bases economic growth on neoclassical theory, as well as other theories that might be considered relevant in this regard. Tax systems therefore must be ideal for attracting mining investments, since they increase a country's foreign exchange earnings.

Environmental taxes such as other quasi taxes can severely affect the cash flow of a mining project if projections are not correctly calculated.

The second quasi tax that affects mining and subsequently potential economic growth from mining rents if not managed, is the contribution to communities. This can be observed from the graph in Figure 2.7.

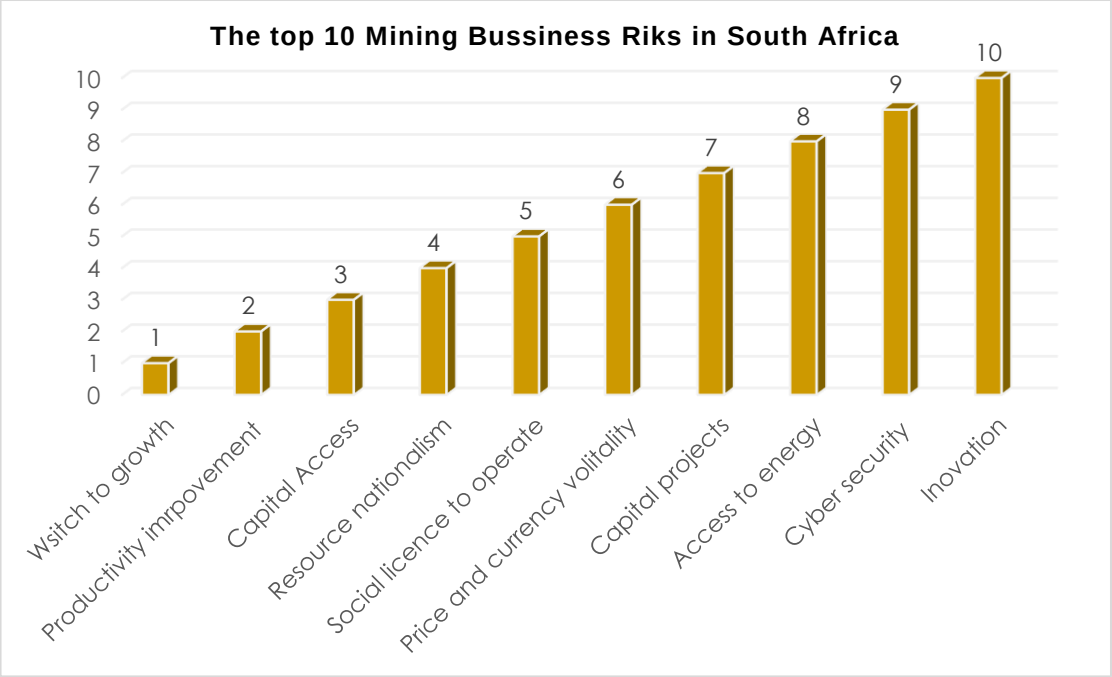


Figure 2.6: Risk radar for mining and metals in South Africa: The top 10 business risks

Source: Samanga (2016)

2.12 Application of Quasi Taxes to Mining Projects and Their Regulation in South Africa

The MPRDA requires the compilation of a Mining Work Programme (MWP) when applying for a mining right. The compilation must follow Sections 23(a), (b), and (c) read together with Regulation 11, which also emphasises the compulsory inclusion of these quasi taxes in mine planning and the MWP. The MWP must contain the following elements among others:

i. Mining costs,
ii. Technical costs,
iii. Regulatory costs.

The details and costing of regulatory requirements in terms of the Act and applicable law must be relevant to the proposed mining operation. This section describes and explains how quasi taxes are factored into MWP. They are however not regarded under tax, but other regulatory requirements, cost of the SLP, capital and other costs, and environmental costs. These taxes are mainly treated as cost of production and not treated as taxes. Sections 7, 8, and 9 are the sections that cater for the quasi taxes in mining and these are regulatory requirements such as the environmental costs, the social and labour costs, and capital and other costs. The four quasi taxes are therefore catered for by the standard guideline on the compilation of an MWP. These elements and other costs all affect the NPV of a project and they contribute to the financial planning of the mine.

The MWP can only be approved once all elements listed under Regulation 11 have been addressed and, if the operation is going to contribute to sustainable development, all socio-economic and environmental aspects must be factored into the proposed cash flow. South Africa has a guideline which is regulated in terms of the MPRDA on the use of the DCF method. Mining companies can also indicate their financial forecasts up to the IRR. Most multinational organisations, although they consider the political economy of a country, mainly derive their project valuations through the NPV and the IRR. Table 2.7 provides an outline of generic cash for mining projects using the NPV and the IRR method.

Therefore, quasi taxes are factored in when an MWP is submitted to the Department of Mineral Resources. The cash flow considers the production, prices of a commodity, grade, revenue, all operational costs, regulatory costs, cost of the SLP, cost of environmental management and rehabilitation, capital expenditure, tax, profit and loss, leading to NPV and thereafter the IRR.

Table 2.7: Guideline on compilation of an MWP in South Africa – Department of Mineral Resources

	CASH FLOW FORECAST AND VALUATION (REGULATION 11 (g) (vi)										
		Y1 R'000	Y2 R'000	Y3 R'000	Y4 R'000	Y5 R'000	Y6 R'000	Y7 R'000	Y8 R'000	Y9 R'000	Y10 R'000
1	REGULATION 11 (1)(d) and (f) Production										
2	REGULATION 11 (1) (e) Price										
3	REVENUE										
4	REGULATION 11 (1) (g) (i) Mining cost										
5	REGULATION 11 (1) (g) (ii) Technology cost										
6	REGULATION 11 (1) (g) (iii) Technical skills cost										
7	REGULATION 11 (1) (g) (iv) Regulatory Requirements Environmnetal Cost										
8	REGULATION 11 (1) (g) (viii) Social and Labour Plan cost										
9	REGULATION 11 (1) (g) (v) Capital and Other costs										
10	WORKING PROFIT / LOSS										
11	TAX										
12	NET CASH FLOW										
13	DISCOUNTED CASH FLOW										
14	The applicant may provide for escalation based on acceptable practice and may provide other indicators such as the IRR										

Source: Department of Mineral Resources

Regulation 11(1)(g)(viii) is used in conjunction with the Mining Charter, as per Section 100 of the MPRDA, and is one element or policy document which is used by the authorities to regulate the capturing of these revenues from mining operations. Although quasi taxes are not factored under tax, they are compulsory costs to mining projects and can hamper investment and affect the NPV.

2.13 Summary and Conclusion of Literature Review

From the literature, it has been established that quasi taxes can result in economic growth. This section has listed the various effects of quasi taxes and can be used as a referral in this regard. For economic growth during planning for mining projects, mining companies must adequately project financial costs in terms of all the quasi taxes. Mining companies must ensure that the beneficiaries of quasi taxes are upskilled particularly in regard to contributing to communities. The latter is as per the endogenous growth as per the neoclassical theory. The various quasi taxes are associated with different impacts and benefits. For example, foreign exchange controls, if ideally conducted, will result in an increase in the rate of savings, rate of investments and foreign exchange earnings. Government equity will result in inclusive economic growth, tax payment during payment of shares and equality.

Chapter 3 discusses data collection, analysis and discussion with regard to quasi taxes.

3. DATA COLLECTION, ANALYSIS AND DISCUSSION WITH REGARD TO QUASI TAXES

The research identified five quasi taxes that are to be considered in terms of the scope of this study. These are government equity, performance bonds and environmental costs, contribution to local communities, and foreign exchange control.

The research involved data collection from internet-based sources. From the literature review, a list of determinants was identified containing the main elements to be considered in order to assess the impact of quasi taxes on economic growth. The determinants include capital in the form of human capital (schooling and health), physical capital, natural resources (depending on technological progress), and those determinants that are controlled by government requirements and environmental variables such as fertility rate, government spending and consumption (such as infrastructure and sanitation), index of maintenance of the rule of law, change in terms of trade, index on democracy and inflation rate.

There are several determinants of economic growth listed by various authors, but for this study, only a limited number of determinants of economic growth were investigated. These include the elements of production in the form of capital (human capital and technological progress) as a driver of both physical capital and natural resources, as well as government spending and consumption, in terms of trade and inflation rate and others long to be metioned.

3.1 THE IMPACTS OF THE RESPECTIVE QUASI TAXES TO THE GROWTH OF THE COUNTRY

3.1.1 The contribution to communities by mining companies in South Africa

Mining companies contribute to communities in many ways, including the contribution (i) through both direct and indirect job creation, and particularly local recruitment; (ii) through small business development and local procurement, including expenditure by employees; (iii) by providing training and development, bursaries and learnerships; (iv) by improving access to healthcare and improving living conditions (water and sanitation, roads); (v) through their CSI and LED programmes; and (vi) through the taxes and levies paid locally.

In 2016, mining companies spent approximately R2 billion in local communities and labour-sending areas. Their contribution to the communities was thus in line with their

agreed SLPs. The information was sourced from the Chamber of Mines, to which approximately 90 percent of the mines in South Africa are affiliated.

South Africa was rated number 66 out of 109 mining countries by the Fraser Institute 2016 Annual Report, with no indication of encouraging investment in the sector. For more information on the above, refer to Figure 3.1 which indicates the socio-economic and community agreement conditions in the approval of mining rights. This figure indicates whether these agreements encourage mining investments, or whether they are a deterrent to investment. From Figure 3.1, it can be observed that the country's community agreements in the mining sector do not encourage investment in the industry. 20 percent of socio-economic agreements/community agreements are not a deterrent to investment. This figure needs to improve to at least between 40 to 60 percent or better, if it is to compete with other African States such as Kenya, Namibia, Mozambique and others.

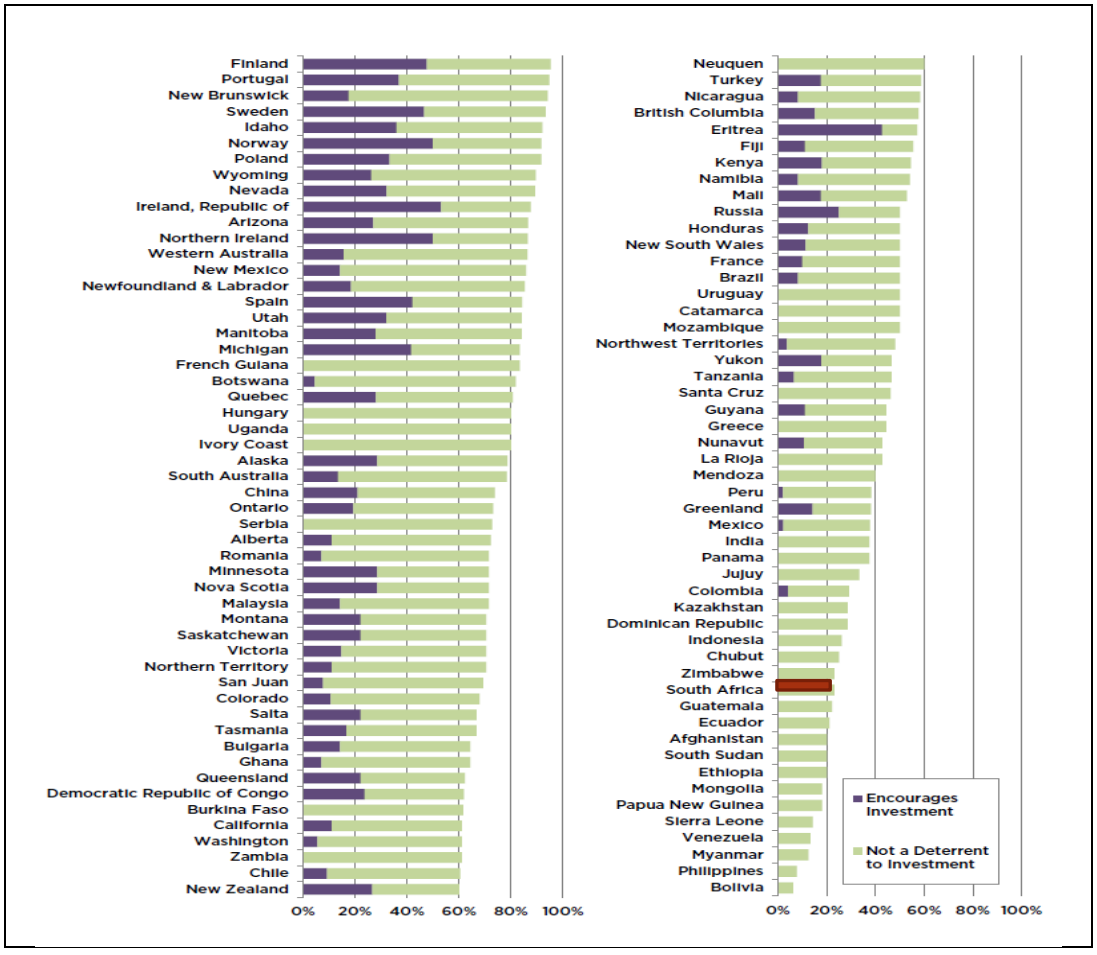


Figure 3.1: Socio-economic agreements/community agreement conditions

Source: Fraser Institute (2016)

3.1.2 Environmental costs to Mining Investments in South Africa

The control of pollution and environmental degradation can be costly and has an indirect effect on the macro-economic level of the economy, thus also affecting the GNP (Vogely *et al.* 1985). This can be supported by the costs incurred in the mining industry of South Africa in 2012 in terms of subcontracting and/or outsourcing for different services and is presented in Figure 3.2.

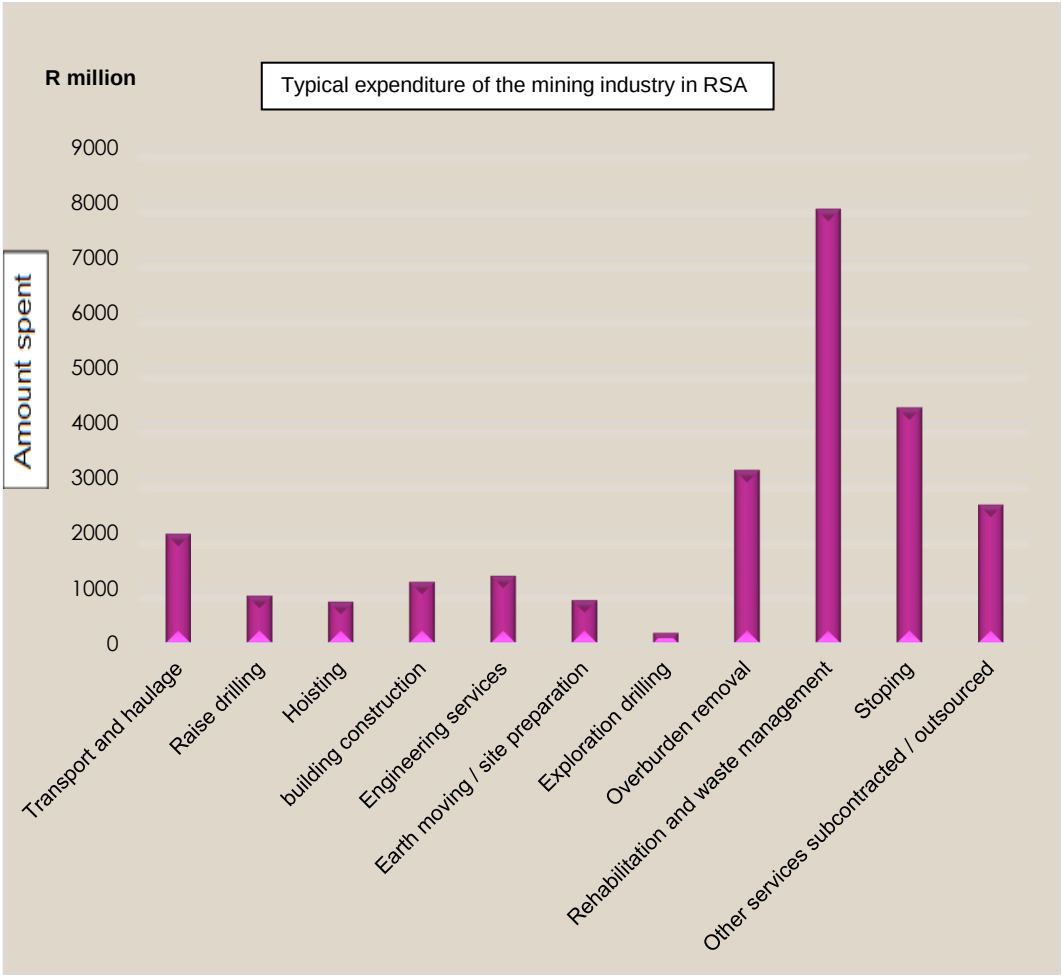


Figure 3.2: The expenditure incurred by subcontracting outsourcing in the mining industry of South Africa in 2012

Source: Statistics South Africa (2012)

Figure 3.2 shows that the cost of subcontracting for rehabilitation is the highest and amounts to R7.8 billion, followed by stoping (extraction of the ore), which amounts to R4.2 billion, of which the latter is somehow a core business. The lowest expenditure is

on exploration drilling. In addition, there is less spending on exploration, which probably has an impact on the growth and development of the mining industry (Ramontja 2016).

The Minister of Mineral Resources is the competent authority to implement the provisions of NEMA and to issue environmental authorisations in terms of the NEMA for prospecting, exploration, mining or operations, with the Minister of Environmental Affairs being the appeal authority for the decisions taken by the Minister of Mineral Resources (Chamber of Mines 2017). However, the new (NEMA) regulations have shortcomings in terms of the following:

- From 20 November 2015, mining companies (permit and right holders) will no longer use a 'trust fund' as a vehicle for financial provision for annual rehabilitation, final rehabilitation, decommissioning and closure, but only for residual and latent environmental impact, which in most cases is difficult to determine scientifically. The companies must therefore amend their trust funds accordingly, even though amendment of a trust fund attracts tax liabilities in terms of the Income Tax Act;
- The wording and the provisions of the current trust funds (trust deeds) will make it difficult for companies to use their current trust fund balance for bank guarantees or cash deposits;
- The requirements of specialists and auditors contribute to another form of quasi tax. The two elements result in extraordinary administrative and cost burdens on the industry, which is likely to cripple any operation that is able to mine profitably;
- The duplicate provisioning and duplicate funding as a result of the requirement for money to be contributed to trust funds for latent defects and for the guarantee, which guarantee is not accessible to the holder for use during the life of the right, means that there is duplicate funding or double provisioning.

According to Trotter (2012), the priorities for a green economy vary from country to country and may range from resilience to economic growth, environmental limits, accountability, resource efficiency, job creation, and others. More information is provided in Figure 3.3. Environmental taxes are mainly aimed at pollution prevention, environmental management and other ecological requirements, but the revenues can

be used for economic growth in developing countries. As illustrated by Figure 3.3, they can also be aimed at promoting participation.

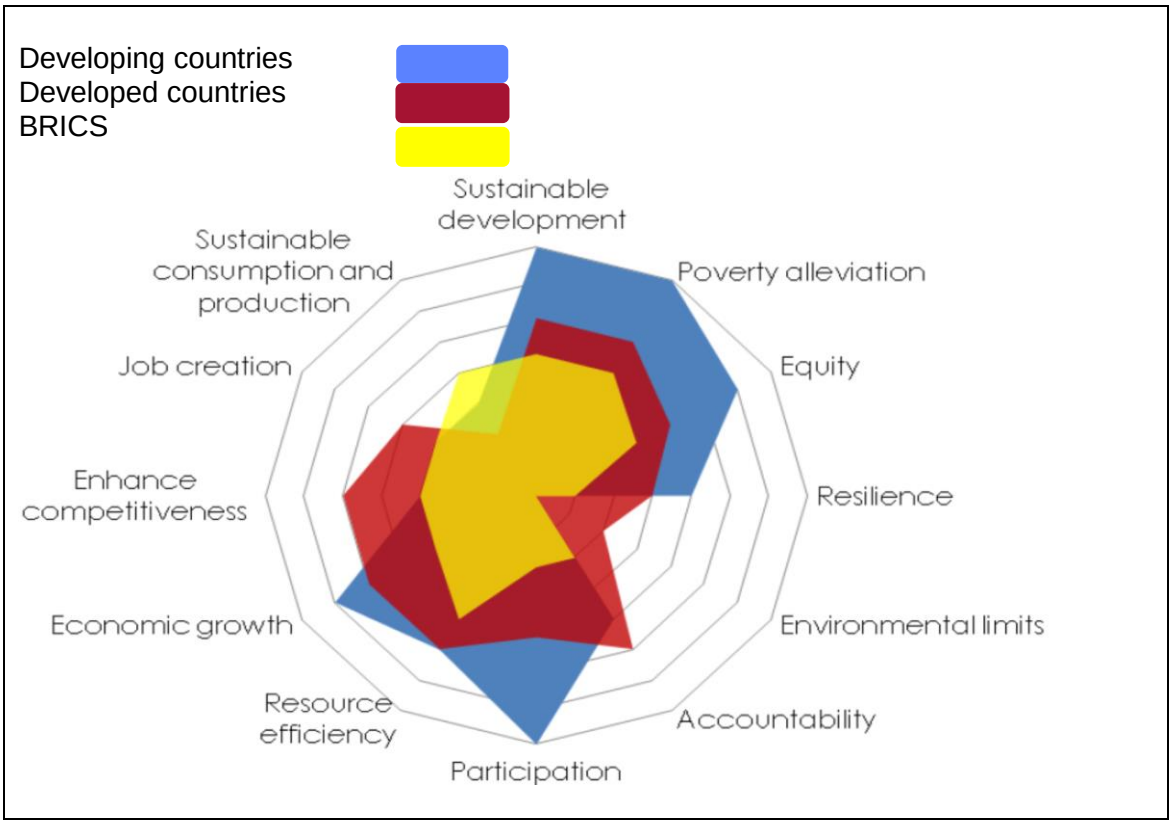


Figure 3.3: The priorities of a green economy (environmental taxes)

Source: Trotter (2012)

The OECD (2017) advocates that environmental taxes should be taxed with the objective of minimising environmental pollution, and not as a source of growth. This is because, if properly implemented, they have an effect on behavioural changes, which lead to the erosion of the tax base in the long run. However, these taxes can contribute a good share in the short run. This is because environmental taxes mainly take the form of excise taxes (tax based on the consumption of certain goods or services). Energy taxes make up to 50 percent of the total environmental taxes in all OCED countries and alliances (including South Africa).

Möhr-Swart (2008) reveals that legislative compliance alone cannot lead to growth; rather organisations must proceed from legislative growth through risk management and on to sustainable development in order to realise environmental and economic

performance and growth. She highlights eco-efficiency[9] and cleaner technology. The former concerns using less energy and materials with reduced emissions. This means that the processes are efficient and reduce environmental costs, which will lead to savings and lower environmental impact.

Using the United Nations Environmental Programme (UNEP, 1989) definition, cleaner production[10] takes place with "the continuous application of an integrated, preventative environmental strategy for processes, products and services, to increase efficiency and reduce risks to humans and the environment" (Shittu 2000 pp 4) It is a process of continuous improvement in environmental and economic performance. Cleaner production successfully integrates and implements a range of well-known concepts of good environmental practice – pollution prevention, waste minimisation, recycling, and the re-use of waste resources as a new product. This leads to savings, since recycling and reuse will cut inventory and procurement of materials in mining projects.

The environmental management and rehabilitation in mining is currently regulated in terms of the National Environmental Management Act, which is in the form of a framework for the regulation of waste, air quality and other environmental pollution and degradation. After a company has met the closure objectives and requirements, the money which was deposited as cash is released to the holder of a mining right, mining permit or a prospecting right. In the case of a bank guarantee, the department writes a letter to the holder and to the financial institution which has issued the bank guarantee, authorising the institution to cancel the guarantee. Trust funds are ring-fenced for environmental rehabilitation only and cannot be used for other purposes.

3.1.3 Foreign Exchange Controls (Savings and Investments)

The main aim of this section is to present the impact of foreign exchange controls. The principal Act which regulates the controls is the International Trade Administration Act. According to Sithole (2008), information from macro-economic studies suggests that the relaxing of foreign exchange controls improves a country's economic growth.

[9] **Eco-efficiency:** The efficiency with which ecological resources are used to meet human needs.

[10] **Cleaner production:** the continuous application of an integrated, preventative environmental strategy to processes, products and services to increase efficiency and reduce risks to humans and the environment (Möhr-Swart 2008).

Countries dependent on new FDI generally are likely to benefit from deregulation methods. In economic theory, capital account liberalisation should allow for the more efficient global allocation of capital from capital-rich industrial countries to capital-poor developing economies. This results in widespread benefits, such as providing a higher rate of return on savings and investments in industrial countries and by increasing economic growth, employment opportunities and living standards in developing countries. For the purpose of this study, only the impacts on the rate of savings and investments will be discussed. Employment opportunities will also be surveyed.

Among the BRICS (Brazil, Russia, India, China and South Africa) nations South Africa has had the highest account percentage share of deficit of up to -4,8 of general government to GDP, followed by India at -4,3 percent, while China has never exceeded -1,7 per cent over this period. Figure 3.4 shows that in the period from 2006 to 2012 South Africa had a surplus of only 0.7 per cent in 2006, second only to Russia, which had a surplus of 7.4 percent in the same year. The worst was Brazil at -3,5 percent. This improved in 2008 when South Africa had a surplus of 1.5 percent which is good for economic growth. The country has struggled since and faces downgrading by various rating agencies.

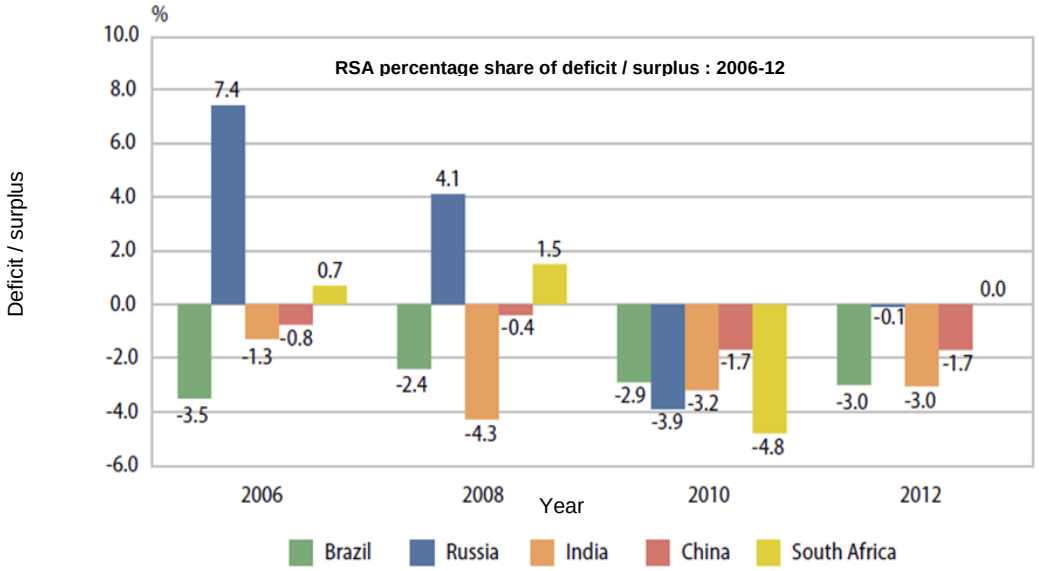


Figure 3.4: Percentage share of deficit / surplus of general government to GDP – 2006/2012

Source: BRICS Joint Statistical Publication (2014)

Masetlana (2013) notes that in the survey conducted by the Department of Mineral Resources, mining and quarrying have effects on economic growth, since both positively contribute to GDP, fixed capital formation and total national export of goods. Mining's contribution to GDP and national exports is presented in Figure 3.5.

The report indicates that the country's mining and minerals industry has been severely affected by a number of unprotected strikes, with platinum mining emerging as the sector that has experienced significant challenges, which directly affected the country's mineral export sales revenue, which declined by 4.6 percent to R269.1 billion in 2012 from R282.0 billion in 2011, accounting for 35.1 percent of the country's total exports value of goods. Platinum demand was mostly affected by the Euro crisis and increased recycling, as well as automotive producers who have replaced platinum with palladium in car manufacturing.

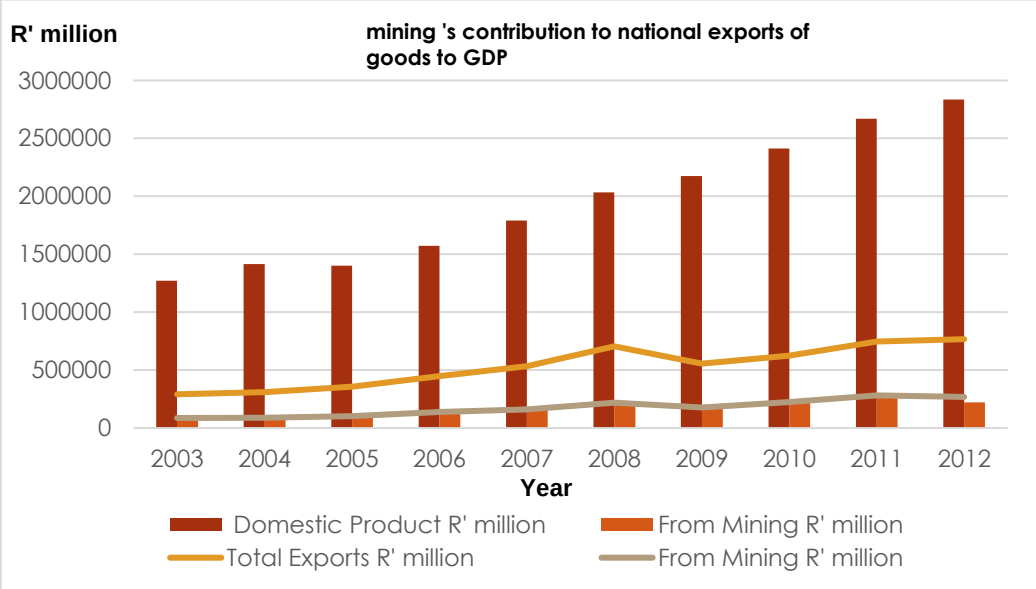


Figure 3.5: Contribution of mining to national total exports of goods and to national domestic product (value added)

Source: Department of Mineral Resources, Directorate Mineral Economics

From Figure 3.5 it is evident that from 2003 to 2011 mining has been on a steady increase in terms of contribution to the GDP. Although the contribution shows a relative decline in 2012, it has been contributing reliably and positively to GDP. There has been a similar pattern in the relationship of its contribution to GDP and its contribution to national total exports.

The contribution of import and export of diamonds to South Africa‘s economy

This section presents the value created by mineral exports to various countries in the 2014 and 2015 financial years.

This section was separated and expanded because of the additional rules that are applied in the buying and selling of these minerals, compared to other commodities. This is because they are uniquely regulated in terms of the Diamond Act, 1986, as amended, and the Precious Metals Act, 2005. Another peculiar aspect of the regulation of diamonds is that the Precious Metals Act also requires everyone who exports diamond mineral from the country to contribute to the local market.

This contribution is tabulated in Table 3.1. A decrease in terms of rough diamonds that have been exported to Israel from 2014 to 2015 may be seen. This amount decreased from 330 384 to 30 488 carats from 2014 to 2015. This has resulted in a decrease in monetary contributions gained from exporting to Israel from R224 032 229 in 2014 to R127 780 321 in 2015.

Table 3.1: Rough diamond exports: 2015 vs. 2014

	2015		2014	
Participant	Carats	Value (US$)	Carats	Value (US$)
Angola	5	100	0.00	0.00
Australia	69	7 379	0.00	0.00
Botswana	4 254 861	514 700 356	5 000 715	662 127 875,00
Canada	30	390	364	64 007
China PR	20371	2 199 587	20920	7 720 851
Core dl voira	0.00	0.00	218	95 468
European Union	2 491 296	343 239 943	2 954 497	446 550 568
India	251 883	27 978 605	152 204	17 974 682
Israel	304 88	127 780 321	330 384	224 032 229
Namibia	0.00	0.00	603	107 249
Russian Federation	13	225 892	0.00	0.00
Singapore	4 388	1 897 404	0.00	0.00
Switzerland	154273	131 585 114	102 899	99 369 164
Thailand	1841	2 179 013	3 408	1 991 996
United Arab Emirates	912 327	163 677 821	1 798 364	208 116 109
United States of America	875	12 840 722	31 162	39 902 325
Total	8 397 242	1 328 312 648	10 395 743	1 708 052 527

Source: South African Diamond and Precious Metals Regulator (2017)

The foreign exchange controls pertaining to diamonds were given special attention as a result of the manner in which they are regulated. Masetlana (2016) indicates that (i) the State Diamond Trader continues to promote the local cutting and polishing industry by sourcing 10 percent of run-of-mine (RoM) production from diamond producers to beneficiaries and (ii) South Africa is among the countries that regulate the sale of diamonds, following the Kimberley Process (KP). In addition, the country is one of the founding members of the Kimberly Process, which brought into existence the Kimberley Process Certification Scheme (KPCS). The KP was established when diamond- producing countries convened in Kimberley, South Africa, in May 2000., to discuss ways to stem the trade in 'conflict diamonds' and ensure that the diamond trade was not fuelling armed conflicts. In December of that year (2000), the United Nations General Assembly adopted land-mark resolution 55/56 of 2000, which supports the establishment of an international certification scheme for rough diamonds.

The diamonds from RoM are intended to support local beneficiation and to secure a diamond supply for local beneficiaries. The diamond industry is also managed by the African Diamond Producers Association, which manages the alignment of policies and strategies intended to maximise the benefits derived from revenues of diamonds across the African continent (South African Diamond and Precious Metals Regulator, 2017).

The effects of the exchange rate on the economy of South Africa

Table 3.2 presents information on the effects of foreign exchange on mining from 2007 to 2016.

Table 3.2: Key mineral industry statistics for South Africa: Exchange rate

		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2015-2016	Average past decade
Rand per US$	R/US$	7.05	8.25	8.44	7.32	7.25	8.21	9.65	10.84	12.75	14.71	15.5	9.45
Rand per Euro	R/euro	9.66	12.05	11.70	9.71	10.08	10.55	12.82	14.40	14.14	16.28	15.1	12.14
Rand real effective exchange rate	Rand index	92.26	82.64	82.64	100.00	96.62	91.09	81.91	79.17	80.08	77.08	-3.7	86.99

Source: Chamber of Mines of South Africa (2017)

Revenue from mineral products and base metals increased from 2006 to 2015. This is presented in Table 3.3. This has a positive impact on economic growth. Mining and mineral-associated products are the main sources of revenue from exports as illustrated in Table 3.3. There is a corresponding increase in the revenues from the exporting of precious metals and stones in line with mineral products from 2006 to 2015. The export of precious metal increased in revenue from R109.7 billion in 2006 to R182.82 billion in 2015.

Table 3.3: Exports by type of commodity in South Africa: R (billion)

	Base metals	Precious metals & Stones	Mineral Products	Chemicals	Transport equipment	Machinery	Vegetable products	Prepared food staff	Live animals & Products	Textiles	Paper and Products
Annually											
2006	68.40	109.70	56.81	22.76	38.61	41.24	10.69	12.96	3.33	4.38	7.56
2007	89.31	133.27	78.36	27.19	43.66	52.94	12.56	13.98	4.37	5.01	8.78
2008	116.72	152.99	121.46	41.28	68.70	64.73	22.59	17.86	5.49	5.46	12.40
2009	77.44	129.64	105.06	29.73	45.07	44.76	21.39	20.43	5.29	4.84	10.30
2010	91.47	149.27	126.73	30.92	52.56	47.26	21.16	19.21	5.21	4.39	10.97
2011	93.94	181.15	176.54	37.11	59.07	56.74	25.68	18.94	5.02	5.40	12.29
2012	92.26	159.90	185.05	41.79	69.22	63.23	26.88	21.49	5.32	6.01	10.81
2013	104.51	172.74	213.60	45.60	75.45	71.52	36.11	27.47	6.66	7.28	12.41
2014	121.15	161.39	214.44	51.92	88.27	80.67	41.40	31.59	8.87	7.86	14.88
2015	115.08	182.82	190.01	55.14	114.43	80.60	44.91	31.65	9.88	8.80	16.99

Source: Bureau for Economic Research (2017)

From Table 3.3, it can be seen that the export of precious metals followed by base metals are the main sources of revenue, with the smallest being live animals and products. Mineral products are third, followed by exported machinery. From the above, it may be stated that South Africa is experiencing a general decrease in foreign exchange regulation (World Bank, 2017). This is presented in Figure 3.6.

	Rank /138	Value	trend
8th pillar: Financial market development	11	5.2	
8.01 Financial services meeting business needs	2	6.0	
8.02 Affordability of financial services	27	4.6	
8.03 Financing through local equity market	1	5.9	
8.04 Ease of access to loans	12	5.2	
8.05 Venture capital availability	53	3.0	
8.06 Soundness of banks	2	6.6	
8.07 Regulation of securities exchanges	3	6.2	
8.08 Legal rights index 0-10 (best)	68	5	

Figure 3.6: Financial market development in South Africa

Source: (World Bank, 2017).

3.1.4 Government equity to mining projects in South Africa

A 2014 report by the World Bank shows that the redistribution of income through the budget lifts more than 3,5 million South Africans out of poverty and reduces the Gini coefficient, a measure of inequality, from 0.77 to 0.59 (National Treasury Republic of South Africa 2017). The State Intervention in the Minerals Sector report (the SIMS report) (2012) indicates that there are various forms of government equity to mining projects. These include free equity participation, carried equity participation and others, as indicated in Appendix B. The report states that in Africa there have been several major reversals of nationalisation, including in particular Zambia, the Democratic Republic of Congo (DRC), Tanzania and Ghana. However, in summary, state participation in mining, through outright ownership or share participation, either on a mandatory basis or through the exercise of option rights, is still prevalent in many developing countries. There is no clear government equity in South African mining projects, but this does take the form of a 26 percent stake in BEE, business partners, communities and employees (staff). The contribution to employees is also supported by the fact that ownership, access and opportunity with regard to the country's mineral and petroleum resources are regulated by the MPRDA, which recognises state custodianship over the country's mineral and petroleum resources (Masetlana 2016).

The significance of government equity in mineral projects

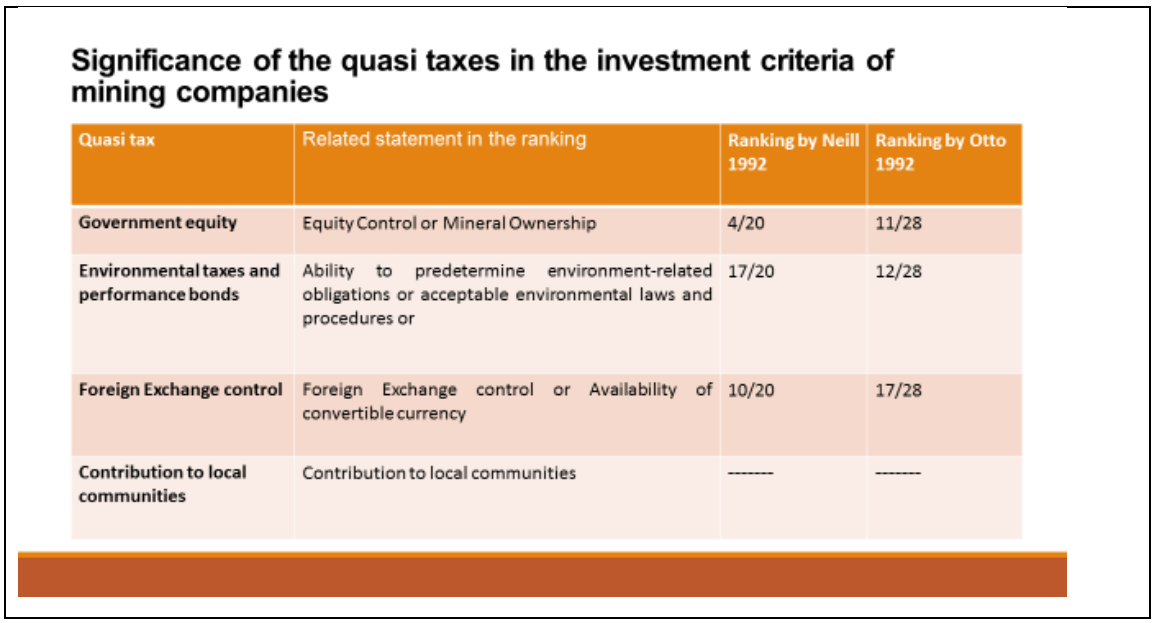
Equity in mineral projects is considered one of the top five investment risks and a critical matter. The significance of government equity as an impediment to investments is presented in Figure 3.7. It must be noted that whenever a county turn to have policy on equity control, it must santisfy all elements of a good tax regime since they have a bearing on decission making by varoius mining companies.



Figure 3.7: The ranking of exploration and investment criteria for mining companies in decreasing order of importance

Source: Ramontja (2016)

According to Ramontja (2016), equity control, which is part of the quasi taxes as per this research, form part of the top 20 issues in the ranking of exploration and investment criteria for mining companies - both ranked by Neill (1992) and Otto (1992) in Vivoda (2017). These are presented in Figure 3.8. It can be observed that in1992, there was still minimal consideration for contribution to local communities for decision-making in terms of mining investmnets. This was assesed by the ranking of both Otto (1992) and Neill (1992). Interestingly, equity control has always been ranked higher than all the other quasi taxes, which means that more emphasis must be placed on any policy document that seeks to address this quasi tax. Environmental aspects were rated differently by the different authers in that Otto (1992) ranked it number 12 out of 28 but Neill (1992) ranked it lower and attached relativelly lesser significance to environmental considerations in this regard. Foreign exchange control and convertability was ranked higher by Neil (1992) than Otto (1992).



Significance of the quasi taxes in the investment criteria of mining companies

Quasi tax	Related statement in the ranking	Ranking by Neill 1992	Ranking by Otto 1992
Government equity	Equity Control or Mineral Ownership	4/20	11/28
Environmental taxes and performance bonds	Ability to predetermine environment-related obligations or acceptable environmental laws and procedures or	17/20	12/28
Foreign Exchange control	Foreign Exchange control or Availability of convertible currency	10/20	17/28
Contribution to local communities	Contribution to local communities	--------	--------

Figure 3.8: The significance of quasi taxes in the investment criteria of mining companies

Source: Ramontja (2016)

Assessment of government equity from the mining charter report dated 2015

This information is based on the Assessment of the Broad-based Socio-economic Empowerment Charter report, or the Mining Charter report (2015). The report indicates that the population size for the assessment comprised all mining rights that were due for assessment. The assessment was based on information submitted on Department of Mineral Resources web-based system of data collection. A total of 962 mining rights were due for assessment. These exclude prospecting rights, authorised to undertake bulk samples for feasibility studies, mining permits, mining rights of less than a year in operation, as well as smelters and refineries, as they are not required to implement the Mining Charter in terms of the MPRDA. Out of the 962 mining rights eligible for assessment, 442 were submitted. This was further reduced to 375, firstly because mining rights that constitute the same mining operations were consolidated, and lastly, because some submissions contained glaringly erroneous data.

When it comes to the extent of broad-based empowerment transactions, a simple average score shows that participation by communities and ESOP participation is low (South Africa. Department of Mineral Resources, 2015). The Mining Charter report further reveals that when size is taken into consideration, the result changes, with the BEE entrepreneurs dropping out of most of the HDSA deals. There is an assumption that most of the larger employers have concluded deals with employees and communities, rather than entrepreneurs. This is represented in Figure 3.9.

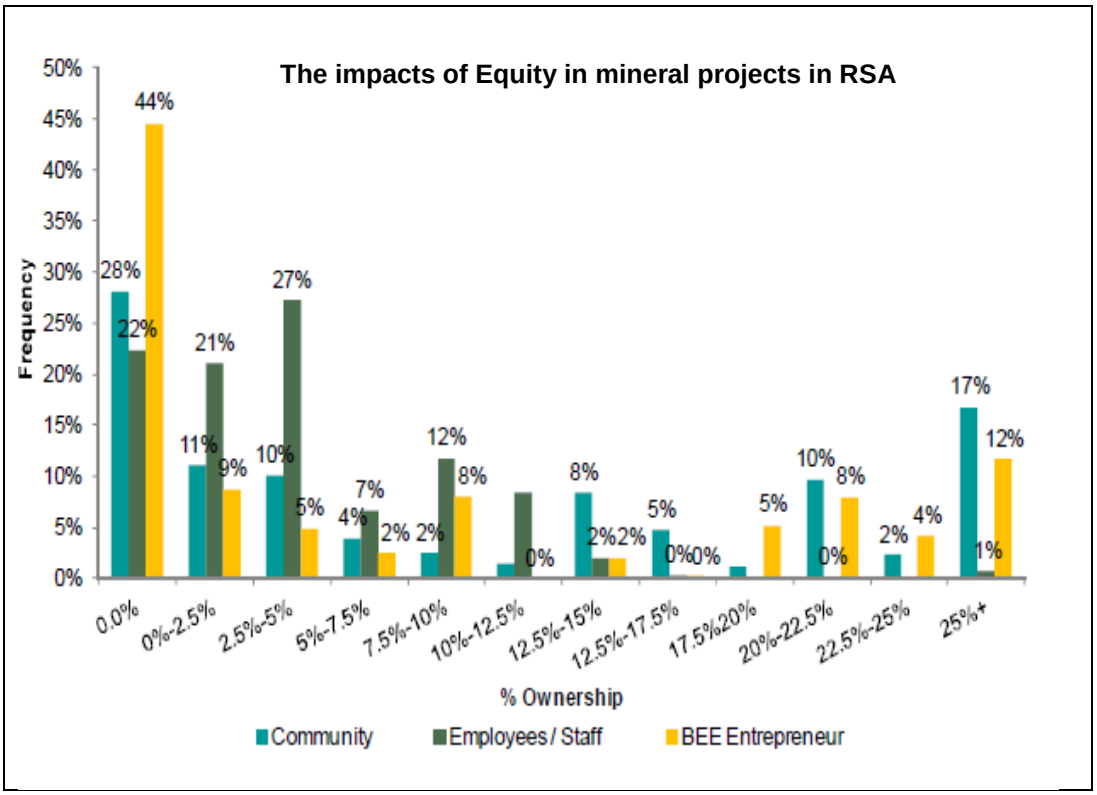


Figure 3.9: Percentage shareholding by workers, BEE entrepreneurs, communities, for right holders with broad-based HDSA shareholding (weighted)

Department of Mineral Resources (2015)

The effects of empowerment transactions of the mining companies within the top 100 of the Johannesburg Stock Exchange-listed companies

In 2015, mining was the largest generator of value and contributed close to R101 billion, followed by banks at a value of R57 billion. Relative to overall sector market capitalisation, mining has also generated the most value, equivalent to 11.8 per cent of market value, followed by healthcare at 7.2 percent and banks at 6 per cent. Mining companies dominated the top three positions, that is, Exxaro Resources Ltd (Exxaro) with 46 percent, Northam with 34 percent and Impala Platinum with 28 percent, using market capitalisation as at the end of December 2014.

Table 3.4: Value created for beneficiaries through BEE deals conducted by the 100 largest companies on the JSE

Sector	Total Value (Rm)	Value as % of mkt cap
Financials	R32.358	5.4 %
Healthcare	R14,29	7.2 %
Industrial	R56,74	2.1 %
Investment companies	R10,43	4.2 %
Mining	R100,92	11.8 %
Pharmaceutical	R9.568	5.0 %
Property	R 8.872	3.9 %
Banks	57,228	6.0 %
Retail	R7,68	1.8 %
Telecoms	R17,25	2.7 %
Travel & Leisure	R1,64	3.6 %
Banks	57,228	6.0 %

The mining companies focused on empowering various beneficiaries and groups, including employees, strategic partners and communities. The companies that are leading in terms of value formation are FirstRand by an amount of R23.2 billion, followed by Exxaro at a value of R16.8 billion and Sanlam's R14.4 billion. The total value which was created by these top 100 JSE companies amounts to R317 billion, on which they have paid tax of R179.5 billion in the 2014/2015 financial year. The way in which empowerment is done by mining companies in the top 100 JSE companies is illustrated in Figure 3.10.

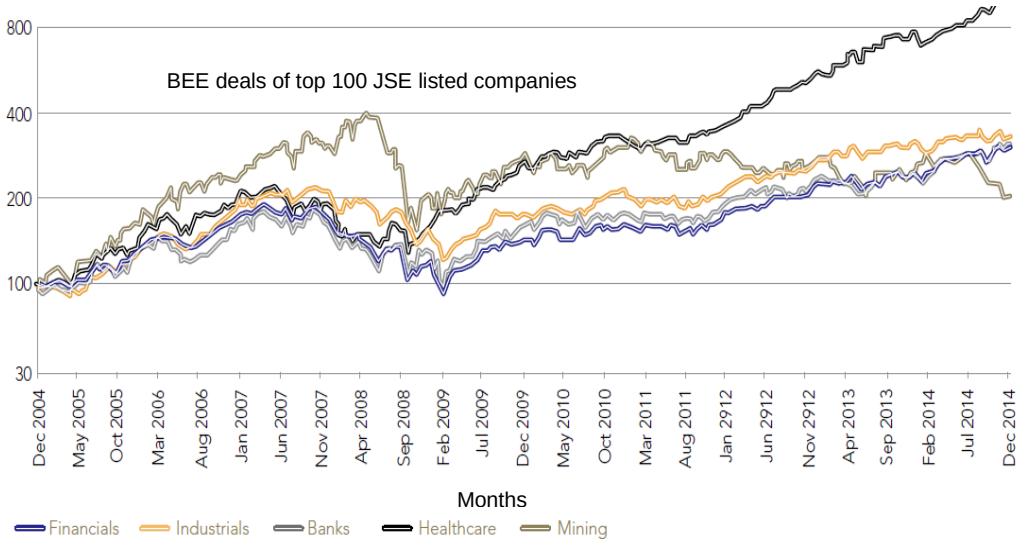


Figure 3.10: Industry indices in terms of value creation from BEE deals of top 100 JSE-listed companies

During the implementation of the MPRDA in 2004, mining companies were in the lead in terms of the effects of BEE empowerment and this is presented in Figure 3.10. The leading mining companies in this regard were Exxaro Resources Ltd with a transaction worth R16.8 billion, followed by Impala Platinum Ltd with a transaction worth R11.3 billion. This is presented in Table 3.5.

Table 3.5: A summary of BEE contribution by selected mining companies in the JSE in 2015

Mining Company	Deal Start date	Live / concluded	Staff schemes	Strategic partners	Community schemes	Total Value (Rm)
Exxaro	Nov 2006	Live	R 1,045	R15,788	R0	R16,832
Impala	Jul 2007	Live	R0,00	R0,00	R11,339	R11,339
Anglo American Platinum	Jun 2002	Live	R0,00	R0,00	R6,652	R 6,652
Kumba Iron Ore	Nov 2006	Live	R646	R0,00	R5,136	R5,787
Northam Platinum	Jun 2008	Concluded	R0,00	R3,921	R0,00	R3,921

Mining contributed approximately R100 billion. The comparative impact of this quasi tax is illustrated in Figure 3.11. The only difference is that the value created by BEE deals is from as early as the year 2000.

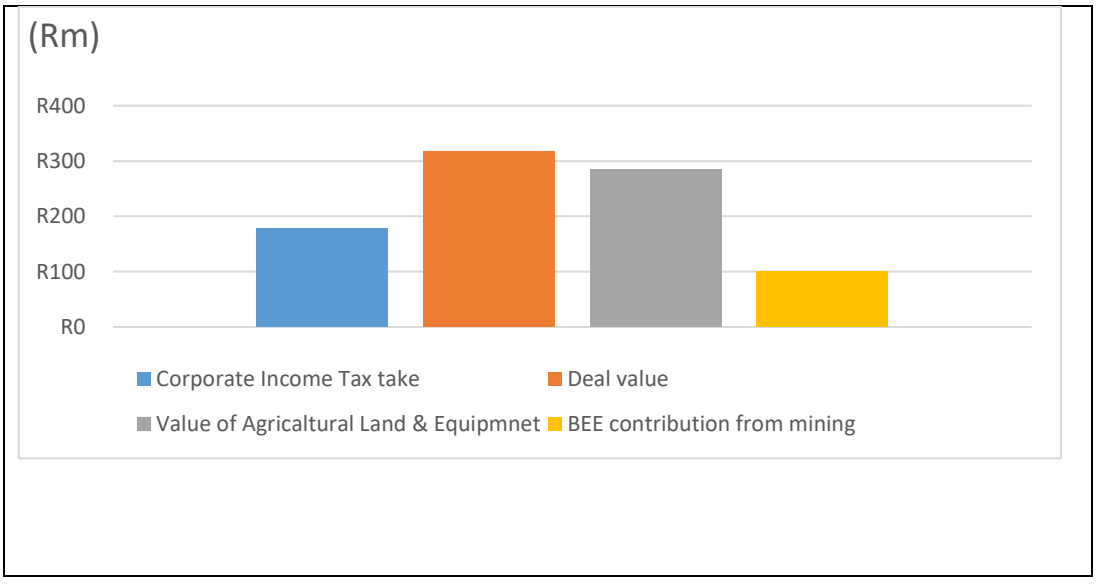


Figure 3.11: The comparative impacts of BEE contribution in 2014

The effects of government equity on economic growth is in the region of R100.195 billion, which amounts to 11 percent of the total amount contributed by the top 100 of the Johannesburg Stock Exchange (JSE).

The Chamber of Mines (2017) indicates that since 2004 the number of HDSAs in skilled and management positions has risen by between 40 and 75 percent depending on category. Since 2000 the value of empowerment transactions has amounted to R205 billion in 2014 monetary terms. All large mining companies achieved the 26 percent target of HDSA ownership and meaningful economic participation. Meaningful economic participation, inclusive of identifiable beneficiaries such as the BEE entrepreneur category, has benefited by 63 percent, communities have benefited by 22 percent, while ESOPs have benefited the least with 15 percent.

The R205 billion is categorised as follows:

• HDSAs participated: R 7.1 million

• Paid in dividends: R 47 billion

• Initial transaction values: R116 billion, and

• Net value creation: R159 billion (after debt, including dividends).

The following chapter will compare South Africa to the rest of the world in terms of the determinants of economic growth.

3.2 Comparing South Africa to the Rest of the World in Terms of the Selected Determinants of Economic Growth

Introduction

This is an exercise which was conducted in order to delineate the state of affairs in terms of the determinants of economic growth. It was conducted in order for the author to determine the extent at which these determinants need intervention. This was done also to assess if it is feasible for the quasi taxes to contribute to these elements of economic growth.

The determinants include capital (human capital and technological progress as a driver of both physical capital and natural resources), government spending and consumption, terms of trade and inflation rate. As indicated earlier in the research,

endogenous growth theory holds, technology is one of the main drivers of economic growth (Barro 1996) but endogenous growth is derived from government policies and choices.

The listed determinants which will be used to assess where quasi taxes are contributing to economic growth and delineating where they can be better applied are technological progress, savings and investment rate, the share of domestic investments in GDP, human capital, the gross school enrolment rate and institutional quality, natural capital share and natural capital per person, civil liberties and democracy, population growth, government spending and consumption, purchasing power parity, trade policy and rule of law.

The research will focus on assessing the trends in relation to the determinants of economic growth within South Africa. This means that the performance of South Africa will be benchmarked against that of the international community.

3.2.1 Technological Progress

Kaplan (2011) points out that new growth theory places technology change and technology spill-overs at the centre of the growth process. However, based on the findings of this study, it was established that natural resources-based activities, mining in particular, by contrast with the manufacturing industry, are not the sites of significant technological change. Natural resources are not a sound basis for long-term development. From this perspective, an important role of policy for commodity-dependent developing countries, is to ensure increasing diversification into other activities such as manufacturing. Although natural resources and mineral resources in particular are undoubtedly in the centre of technological change, this is not sufficient as minerals are often regarded as low technology, because the conventional indicator used to determine the technological intensity of an industry is research and development (R&D) expenditure as a percentage of turnover.

South Africa supports R&D in terms of section 11(d) of the Income Tax Act. According to this section, a company undertaking R&D in the Republic of South Africa qualifies for a 150 percent tax deduction on its operational R&D expenditure. This incentive is available to businesses of all sizes, in all sectors of the economy that are registered in South Africa. All eligible R &D expenditure will qualify for an automatic 100 percent tax

deduction. An additional 50 percent uplift applies to expenditures on R &D activities that have been approved by the Minister of Science and Technology, based on the provisions of section 11(d) of the Income Tax Act.

This incentive is aimed at encouraging businesses to undertake and invest in R&D in South Africa. The objective is to help companies build capabilities to create new products, processes, devices and techniques, and/or significantly improve existing ones. This incentive applies to most companies (subject to certain exceptions) and is not specifically intended for the benefit of mining companies. Apparently to avoid a double tax incentive, the Act excludes this benefit insofar as it relates to mineral exploration or prospecting, except research and development carried out to develop technology used for such exploration or prospecting (Department of Science and Technology, 2016).

Solomon (2012) highlights that there is a strong relationship between investment in mineral technology and success in creating both forward and backward linkages for mineral beneficiation and clusters. South Africa still lags behind its peers (BRICS countries) outside the African continent such as Brazil and China. Table 3.6 provides more information on this.

Table 3.6: Percentage contribution to investment in mineral technology R&D by different countries

Country	Percentage contribution to GDP
Sweden	3.60%
Finland	3.50%
Australia	2.00 %
Norway	1.60%
China	1.40 %
Brazil	1.10 %
South Africa	0.9 %
Chile	0.7 %
Malaysia	0.6 %
Botswana	0.5 %
Zambia	0.3 %

Source: Solomon (2012)

Exogenous theory holds that technology progress is exogenous and automatic. The endogenous theory of economic growth makes provision for the sources of growth in an economy to be assessed. This study will therefore assess the rate and the mode of technological progress in the country, as suggested by endogenous growth theory.

South Africa's research and development

The main driver of technology expenditure in the 2014/2015 financial year was the government with an amount of R12 873 billion, followed by business at R11 982 billion. Mining is included in the latter amount. Figure 3.12 represents the percentage contribution of mining to R&D. Mining and quarrying remained the third-largest contributor to BERD, attracting an expenditure value of R1.34 billion, but this represents a year-on-year decrease of 20 percent.

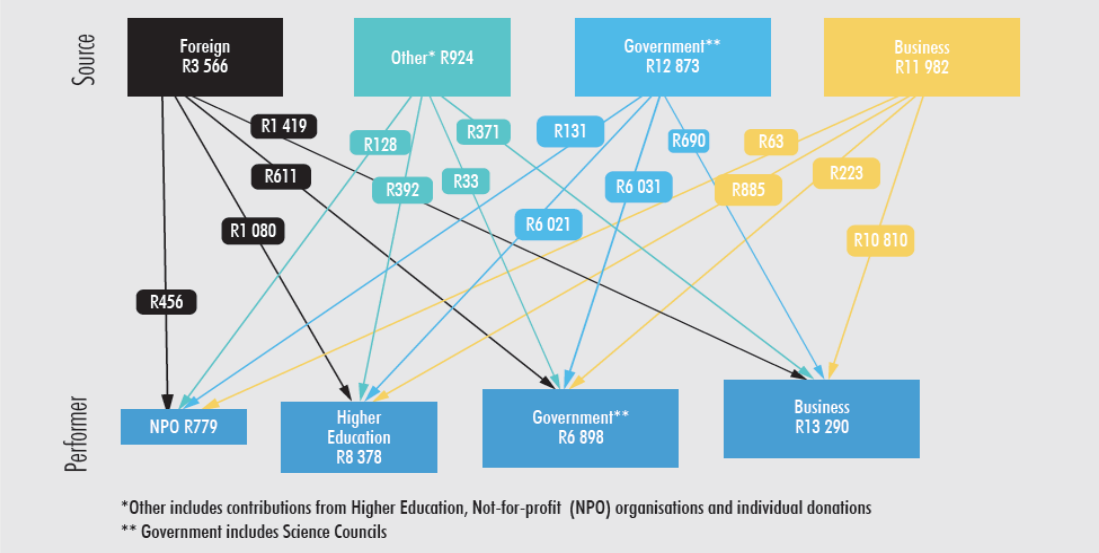


Figure 3.12: Major flow of funding to South Africa's R & D – 2014/5

Source: (Department of Science and Technology, 2016)

South Africa's gross expenditure on R&D (GERD) has fluctuated and reached its peak between 2007 and 2009. This is presented in Figure 3.13. Not once between 1993 and 2015 did the country reach even 1 percent of GERD as a percentage to GDP. By contrast, a country such as Australia contributes approximately 8.5 percent of GERD as a percentage to GDP. This contribution has risen from 2 percent in 2012, as illustrated in Table 3.6.

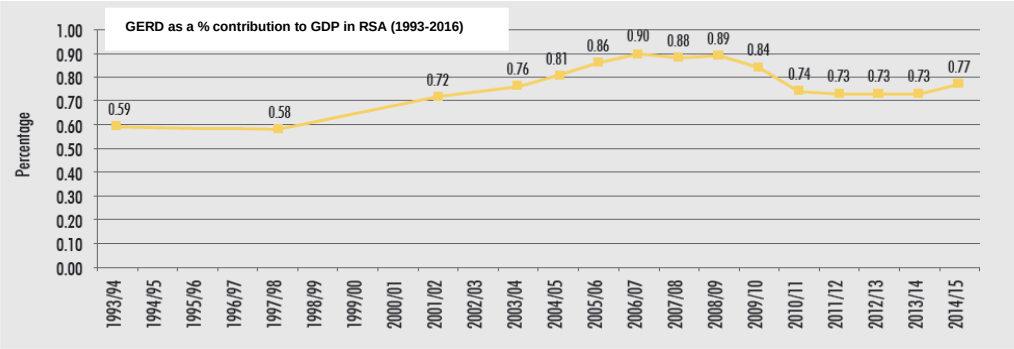


Figure 3.13: GERD as a percentage to GDP from 1993 to 2015

Source: (Department of Science and Technology, 2016)

A comparison of South Africa's research and development with the rest of the world

Countries such as China have high gross domestic expenditure on R&D, while South Africa is spending less than the median. This is clearly demonstrated in Figure 3.14. In terms of R&D expenditure, the leading country is the United States, which spent US$457 billion.

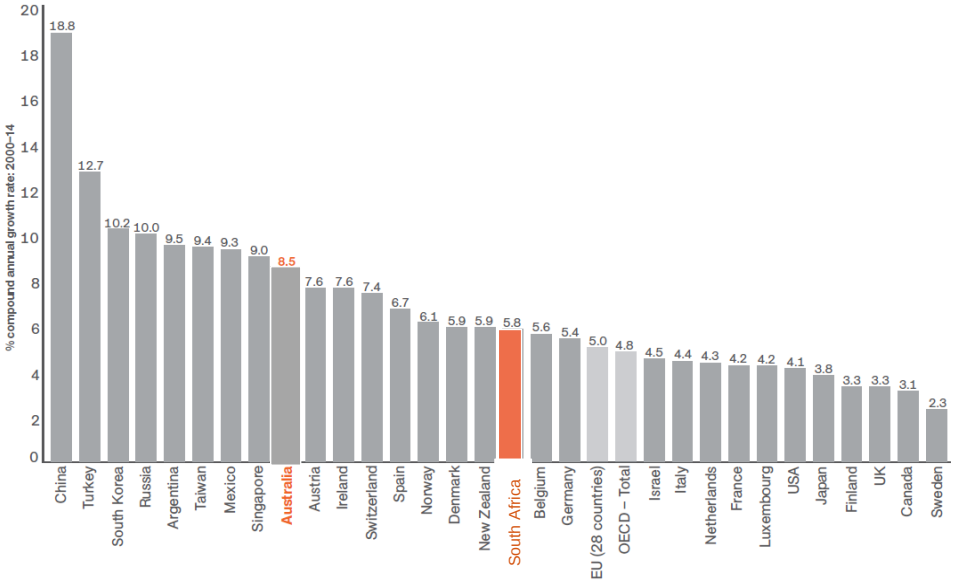


Figure 3.14: Australia's gross domestic expenditure on research and development compared to South Africa and other countries

Source: (Australian Government, 2017)

Australia's annual GERD rose by 9 percent per annum between 2000/01 and 2014/15 to exceed AU$33 billion (Australian Government, 2017). The main expenditure was made by business expenditure on R&D (BERD). This accounted for 57 per cent of Australia's total R&D expenditure, an increase from AU$5 billion in 2000/01 to about AU$19 billion in 2014/15.

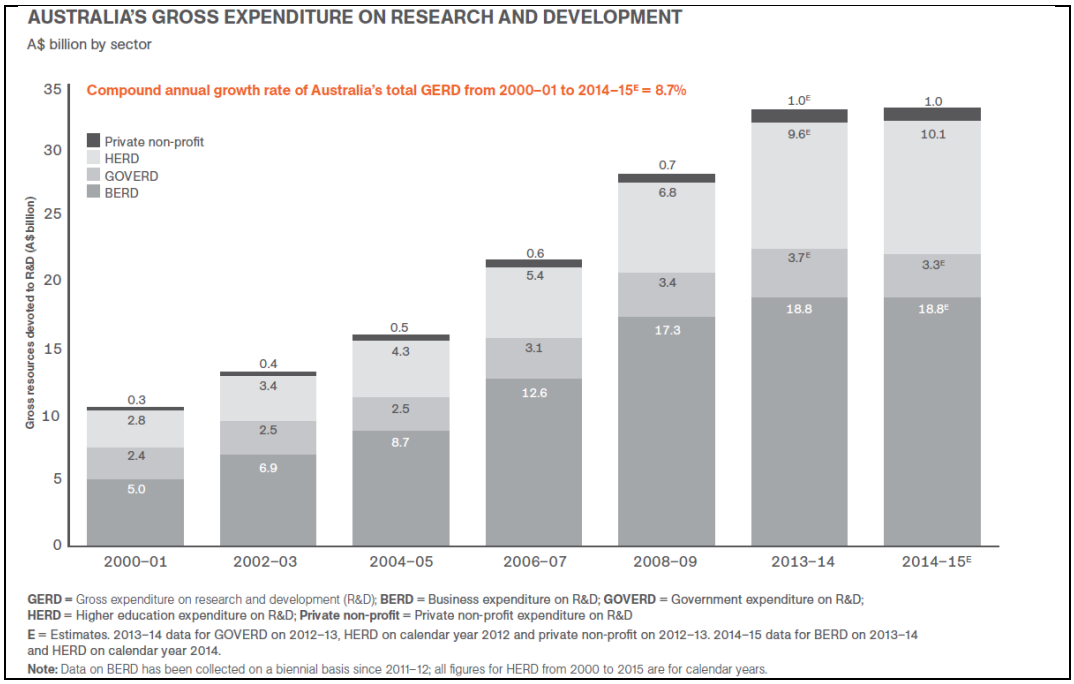


Figure 3.15: Australia's segmented gross expenditure on research and development

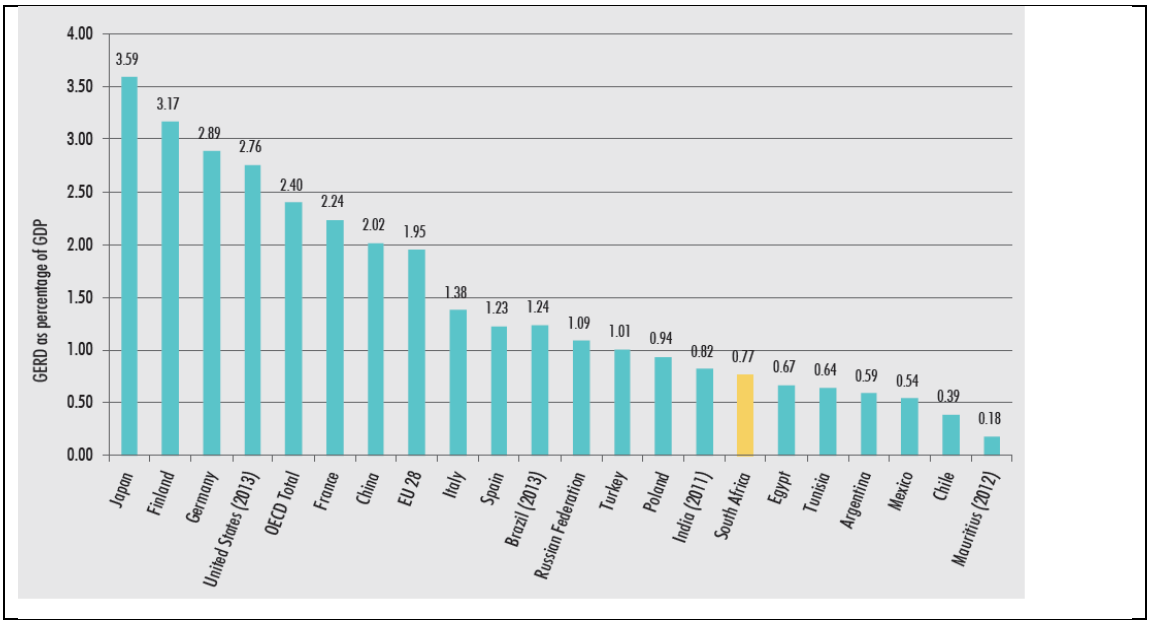


Figure 3.16: South Africa's GERD percentage to GDP in relation to other countries

Research and development expenditure in South Africa

A survey of R&D for the 2014/15 financial year showed an improving positive outlook for R&D investment in South Africa. GERD increased by 8.1 percent in real terms from 2013/14 to 2014/15. This is the fourth consecutive year that GERD has increased in real terms, after the contraction in 2009/10. At R23.3 billion in 2014/15, GERD, in constant 2010 rand terms, almost reached the peak of R24.1 billion that was achieved in 2008/09.

It is encouraging that the business sector, and particularly the manufacturing industry, has shown an acceleration in R&D expenditure, contributing the most to the reported increase in GERD. GERD as a percentage of GDP, an indicator of R&D intensity in the economy, was 0.77 percent in 2014/15, an improvement from the 0.73 percent that was reported in the three consecutive previous surveys. However, this improvement takes place in conditions of a slowing rate of GDP growth, which was 2.2 percent in 2013 and 1.5 percent in 2014. Ideally, such an improvement should occur in an environment of strong GDP growth. With respect to indicators for R&D personnel, the ratio of full-time equivalent researchers per 1 000 employed has stagnated between 1.4 and 1.6 for the past ten years. This indicates that greater efforts are required to expand the researcher workforce, which has grown at a rate equivalent to that of overall employment in the economy (Department of Science and Technology, 2016).

Summary of the segmented gross economic research and development by Standard Industrial Classification (SIC) in RSA

The study found that mining and quarrying remained the third-largest contributor to BERD, attracting an expenditure value of R1.34 billion. This nevertheless represents a year-on-year decrease of 20 percent (Department of Science and Technology 2016). In the 2014/15 survey the agriculture, hunting, forestry, and fishing sectors showed growth, with an increase in expenditure of 26.4 percent, from R364 million in 2013/14 to R460 million in 2014/15. The wholesale and retail sectors recorded a decrease in R&D expenditure in 2014/15, reporting R14.65 million less R&D than in 2013/14. The construction sector remained a very small R&D contributor, accounting for less than 0.1 per cent of BERD in 2014/15, as well as 17.4 percent less R&D expenditure in 2014/15 than in 2013/14. Business R&D expenditure is represented by Figure 3.17.

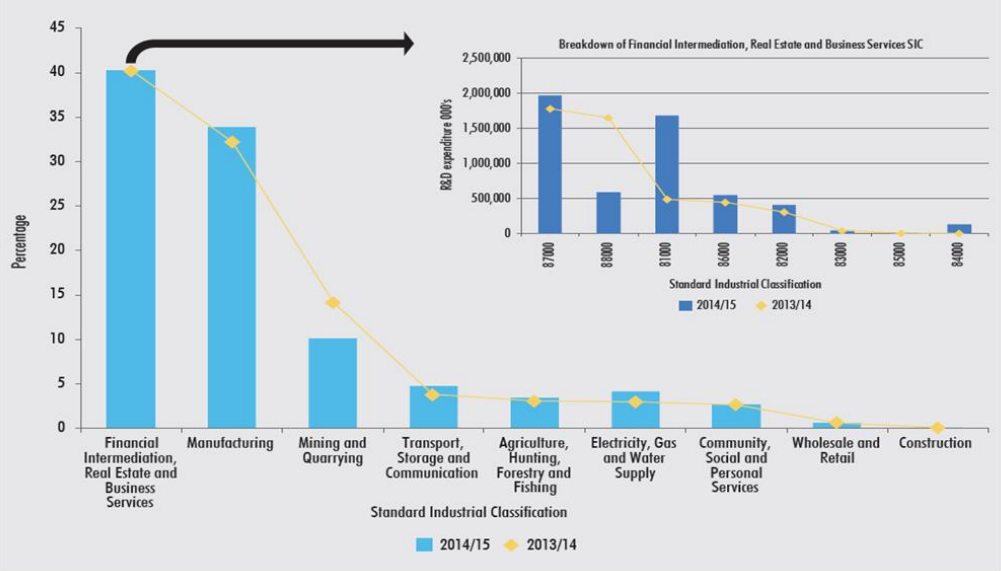


Figure 3.17: Business R&D expenditure by SIC category (as a percentage of GERD), South Africa, 2013/14 and 2014/153.2.2 Saving and investment rate

Source: (Department of Science and Technology, 2016)

Kaplan (2011) indicates that there is a widespread view that while both the CSIR and MINTEK have some capacity, there has been a clear deterioration over time. Skilled personnel have been lost and a number of programs closed, particularly at the CSIR. The latter is said to have hardly any research capacity remaining in relation to mining.

3.2.2 The Share of Domestic Investments in Gross Domestic Product

South Africa's savings are lower than its investments. However, even though investments are relatively higher than savings, they are both lower than the NDP targets. Findings from other sources are presented in Figure 3.19.

(a) Growth in investment in fixed capital

Percentage	2014	2015	2016[1]
By industry			
Mining and quarrying	1.3	-1.1	1.3
Manufacturing	-3.0	-0.2	-4.3
Electricity, gas and water	6.4	2.1	4.1
Transport, storage and communication	5.8	4.6	-8.5
Finance, real estate and business services	-4.0	0.8	-6.8
Community, social and personal services	5.6	12.4	-0.7
By type of organisation			
General government	8.5	14.6	0.8
Public corporations	0.7	3.5	-1.5
Private business enterprises	0.3	-0.6	-5.9
Total gross fixed capital formation	**1.5**	**2.5**	**-3.9**

(b) Ratio of investment and savings to GDP, 2015

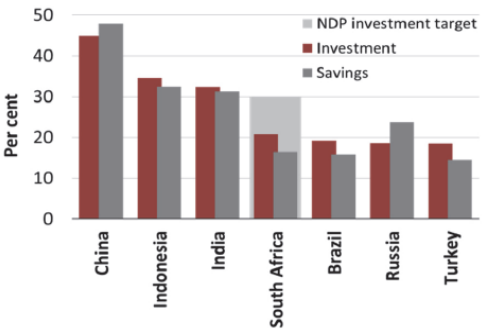


Figure 3.19: Growth and ratio of investment in fixed capital of South Africa

The share of mining and quarrying on growth in investment in fixed capital was low in 2015 and it was negative 1.1 (-1,1) but improved in 2016.

The Fraser Institute (2016) expresses concern regarding the effects of uncertainty, as well as the legal battles between the South African government and the Chamber of Mines of South Africa, leading to a decrease in the ranking of the country in terms of investment attractiveness, compared to its African counterparts and the world at large. The dispute is, according to the Fraser Institute (2016), the BEE status (Figure 3.18).

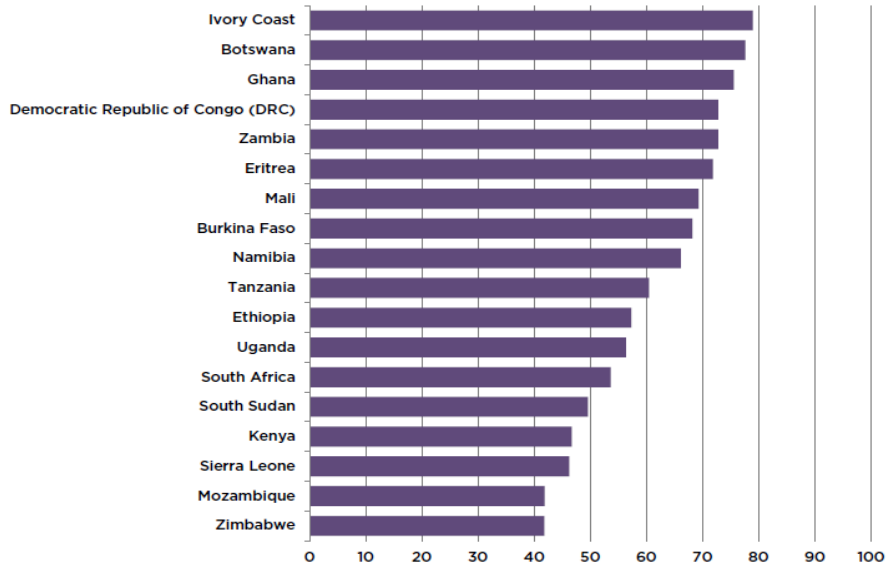


Figure 3.18: Mining Investment attractive (Index – Africa)

Source: Fraser Institute (2016)

3.2.3 Human Capital/Gross School Enrolment Rate and Institutional Quality

Lonkanc (2007) indicates that there is a correlation between institutional quality, human capital and economic growth. However, in terms of the determinants of economic growth, most authors separate human capital from institutional quality. A good example is the determinants of economic growth listed by Barro (1996).

The synergy between the two determinants, human capital and institutional quality, has been well described by Lonkanc (2007) and this study will combine the two. Both human capital and institutional quality have an influence on economic growth. If African countries could raise their level of human capital, they could reduce the probability of experiencing negative economic growth. He indicates that African countries have a higher chance of building institutional capacity than the rest of the world, through investment in human capital.

This is supported by Barro (1996), who maintains that the initial level of human capital is a good determinant of economic growth. A survey was carried out by Deloite in South Africa based on

- Organisation of the Future,
- Employee Experience,
- Talent Acquisition,
- Careers and Learning,
- Diversity and Inclusion,
- Performance Management,
- Leadership,
- Digital Human Resource,
- People Analytics,
- The Augmented Workforce, and
- Robotics, cognitive computing.

The results of the survey are illustrated in Table 3.8. The table shows, all the surveyed industries with the exception of the technology, media and telecommunication sectors, which are ranked less than 50 percent in terms of robotics and cognitive computing. Because South Africa is part of the global community, this area has to improve in all the other sectors. From the table, another area which would seem to require improvement is talent acquisition in energy and resources. Ratings of less than 60 percent were attributed, including people analytics at 54 percent and the augmented workforce at 58 percent. The public sector was rated 58 percent in terms of augmented workforce (Deloite, 2017).

Table 3.8: Human Capital Trends Report for South Africa, 2017



Source: (Deloite, 2017)

The Chamber of Mines of South Africa (2015) indicates that in 2015, the mining sector invested R5 billion in training. In addition, more than 18 000 tertiary education students were funded between 2011 and 2015, through the provision of bursaries and workplace experience. The industry also spent R69 million on learnerships and skills development. In this regard, the Australian Government (2017) stresses that Australia's economic growth is underpinned by strong and stable institutions, sound regulatory policies, plentiful natural resources and a sophisticated services sector. These are also coupled with an ability to respond to global changes and demand, which has helped the country to achieve a positive economic outlook for more than two decades.

The World Bank (2017) uses different pillars as a basis for competitiveness as a country to rate different countries. In the grouping or rankings Institutions are the first pillar and they are followed by infrastructure as the second pillar. The pillars proceed until the twelfth pillar, which is innovation. Institutions are rated in terms of the first pillar, competitiveness, as indicated. This considers property rights, intellectual property protection and others (see Table 3.9).

It was subsequently found that South Africans are showing less trust in their politicians. As Table 3.9 shows, there is also a problem with regard to the ethical behaviour of firms and others that are illustrated. The country used to have high investor protection, but this has since deteriorated. The country also has a problem with property rights, but it is improving in terms of the efficiency of the legal framework in settling disputes. For the improvement of institutions and human capital, it is recommended that human capital be skilled and oriented to those problems that are leading to regression in the quality of institutions and quasi taxes could be channelled into those areas, particularly in terms of contributions to communities and BEE sectors (government equity).

Table 3.9: South Africa's global competitiveness index in detail

	Rank /138	Value	trend
1st pillar: Institutions	40	4.5	
1.01 Property rights	29	5.4	
1.02 Intellectual property protection	21	5.7	
1.03 Diversion of public funds	96	3.0	
1.04 Public trust in politicians	109	2.2	
1.05 Irregular payments and bribes	53	4.4	
1.06 Judicial independence	16	5.8	
1.07 Favoritism in decisions of government officials	115	2.3	
1.08 Wastefulness of government spending	88	2.8	
1.09 Burden of government regulation	106	3.0	
1.10 Efficiency of legal framework in settling disputes	9	5.6	
1.11 Efficiency of legal framework in challenging regs	10	5.3	
1.12 Transparency of government policymaking	44	4.5	
1.13 Business costs of terrorism	64	5.3	
1.14 Business costs of crime and violence	133	2.4	
1.15 Organized crime	99	4.2	
1.16 Reliability of police services	115	3.3	
1.17 Ethical behavior of firms	36	4.5	
1.18 Strength of auditing and reporting standards	1	6.7	
1.19 Efficacy of corporate boards	3	6.3	
1.20 Protection of minority shareholders' interests	1	6.2	
1.21 Strength of investor protection 0-10 (best)	14	7.2	

Source: World Economic Forum (2017)

South Africa's primary school enrolment rate is increasing, which places the country in a better position for future growth and competitiveness with its peers. This relationship is better illustrated in Table 3.10, which shows that there is an increase in terms of the health and primary education status of the country. The primary education enrolment rate stands at 97 percent. According to Barro (1996), this indicator is crucial for economic growth, but the most important one is the secondary school enrolment, since students are also learning skills that they can use in a working environment.

Table 3.10: Health and primary education

	Rank /138	Value	trend
4th pillar: Health and primary education			
4.01 Malaria incidence cases/100,000 pop.	25	35.2	
4.02 Business impact of malaria	30	5.1	
4.03 Tuberculosis incidence cases/100,000 pop.	137	834.0	
4.04 Business impact of tuberculosis	130	3.7	
4.05 HIV prevalence % adult pop.	135	18.9	
4.06 Business impact of HIV/AIDS	130	3.4	
4.07 Infant mortality deaths/1,000 live births	107	33.6	
4.08 Life expectancy years	130	57.2	
4.09 Quality of primary education	126	2.7	
4.10 Primary education enrollment rate net %	44	97.1	

Source: World Economic Forum (2017)

South Africa is facing the challenge of a deterioration in its secondary education enrolment rate, which stands at 9.8 percent, which is 3.3 per cent lower than the primary school enrolment rate. This is illustrated in Table 3.11. The tertiary education enrolment rate is at 19.7 percent which does not coincide with the secondary school enrolment rate as indicated. The overall rating indicates stability in terms of higher education and training. Quasi taxes should be used to fund research to investigate the causes of decreased enrolment at secondary school level.

Table 3.11: Higher education and training

	Rank/138	Value	trend
5th pillar: Higher education and training	77	4.2	
5.01 Secondary education enrollment rate gross %	67	93.8	
5.02 Tertiary education enrollment rate gross %	99	19.7	
5.03 Quality of the education system	134	2.3	
5.04 Quality of math and science education	138	2.2	
5.05 Quality of management schools	21	5.4	
5.06 Internet access in schools	111	3.5	
5.07 Local availability of specialized training services	33	5.0	
5.08 Extent of staff training	19	5.0	

Source: World Economic Forum (2017)

Barro (1996) states that increased enrolment at secondary schools and higher education institutions increases the chances of economic growth, since students learn more skills that they can use in the workplace and add more value than they can with just a primary school education. South Africa‘s higher education trend is represented by Figure 3.19.

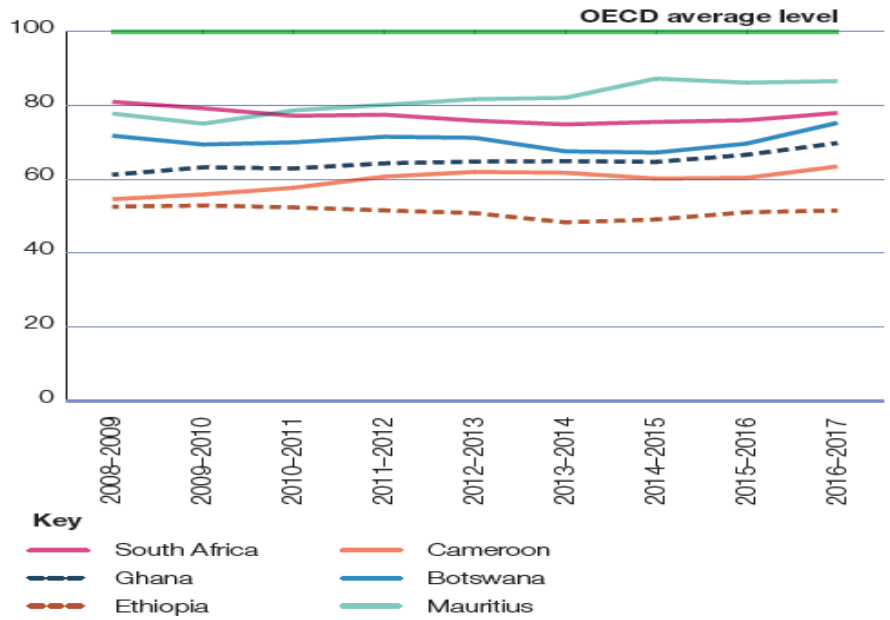


Figure 3.19: Trend in higher education in selected African countries

Source: World Economic Forum (2017)

South Africa is ranked 47th out of 133 countries and is one of the region’s most competitive economies, climbing two places (World Bank, 2017). South Africa

maintains its regional leadership in terms of financial markets, competition, infrastructure, and education, despite recent challenges from exchange rate volatility, governance concerns and policy uncertainty, as reflected in the institutions pillar. Without comparing the country to its peers, Figure 3.20 shows that the country must improve in terms of its labour market efficiency and innovation pillars.

The country is ranked 35 from 133 countries in terms of innovation. The country is rated 49 out of 133 countries in terms of technology readiness. This is affected by indicators such as FDI and technology transfer that are low at 52 out of 133 countries. The country is ranked 81 out of 133 countries in terms of export percentage to GDP.

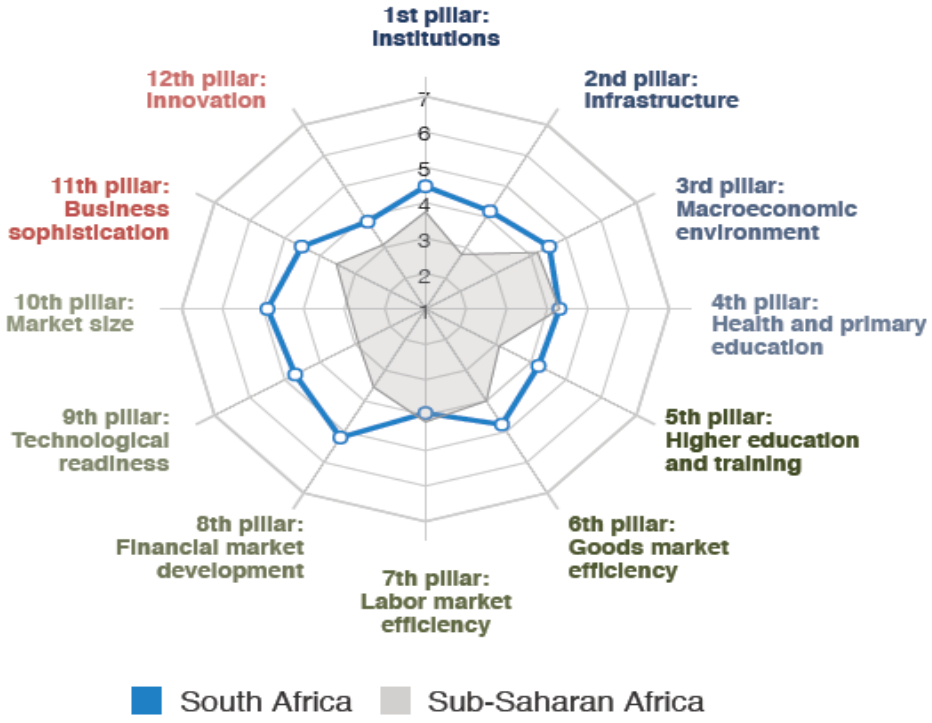


Figure 3.20: South Africa's pillars of competitiveness

Source: World Economic Forum (2017)

In terms of the quasi taxes, the one quasi tax which is directly liked to this determinant of economic growth is contribution to communities. Mining companies must not default in terms of Local Economic Development projects that support building of schools, libraries and other related infrastructures committed in their SLP projects.

3.2.4 Civil liberties and Democracy

Burro (2003) indicates that increase in democracy tends to stimulate growth. However the positive influence attenuates as democracy rises and reaches zero when the indicator takes a mid-range value of 0.56. This implies that democratization appears to enhance growth for countries that are not very democratic, but to retard growth for countries that have already achieved substantial amounts of democracy. The data was collected from South Korea, Botswana, Singapore, Spain, Brazil and others indicated in the research report. The information is from 1965 to 1995. This implies that mining companies must always involve all relevant stake holders (explicitly) in the drafting and/or adopting of any policy documents associated with economic growth, in order to achieve anticipated economic growth.

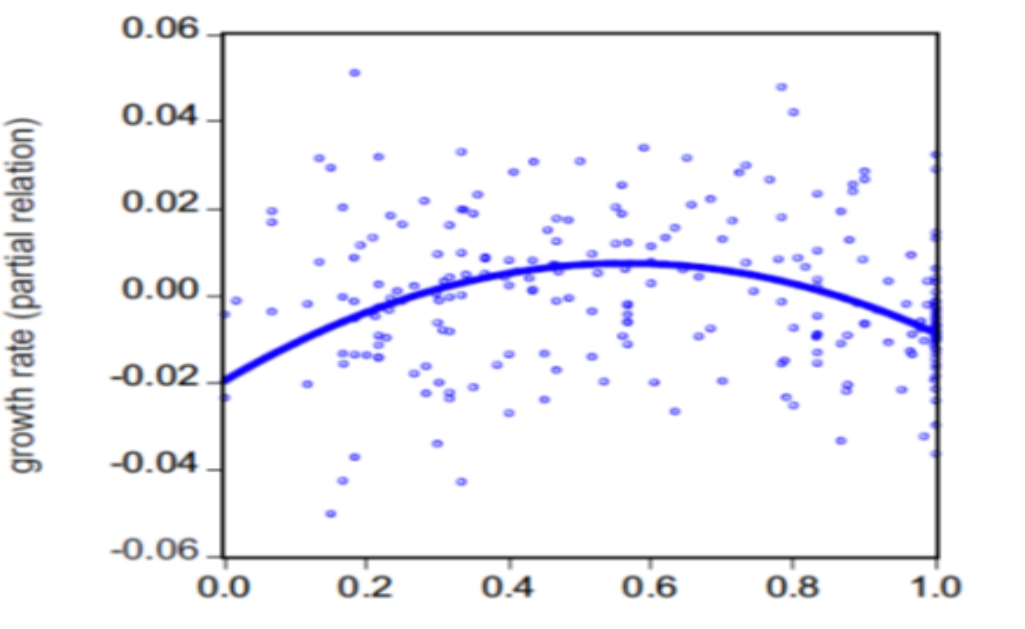


Figure 3.21: Democracy indicator (electoral rights) for various countries

Source: Barro (2003)

South Africa's burden of government regulation is increasing and this will affect the rule of law, which will directly affect economic growth (World Economic Forum, 2017). In order to realise economic growth from quasi taxes, the government must increase its resources to meet the growing burden of government regulation, particularly as it relates to the determinants of economic growth. This however is linked to the quality

of institutions and human capital. Lokanc (2007) maintains that although African countries should adopt democracy, history has demonstrated that autocratic leadership can produce very high growth rates due to the autonomy of the state. However, in the analysis, the data indicate that Africa suffers from a shortage of liberal dictators. Rather than adopting harsh policies which will deliver long-term growth for African countries, a great number of African dictators restrict civil and political liberties to secure power and pursue activities of self-enrichment.

In order to achieve neutrality and/or equity and other attributes of a good tax regime, an adjustment on contribution of these taxes must have the interest of the people for them to achieve economic growth and minimise dictation by affected or and interested parties.

3.2.5 Population Growth

Information on population growth is presented in Table 3.12. The increase in population growth requires accompanying positive economic growth, since the opposite will lead to resource scarcity and, ultimately, a subsequent decrease in the standard of living in the country and increased poverty. The standard of living will affect the health of citizens, life expectancy and other related matters. The population of South Africa is in the region of 56 million and the population growth rate was 1.62 in 2016 as illustrated in Table 3.13 (Statistics South Africa, 2016). Although quasi taxes may not have a direct contribution to this determinant of economic growth, they can be used in the implementation of health education and socio-economic awareness in communities affected by mining projects.

Table 3.13: The estimated annual population growth rate (in percentage (%)) , 2002 to 2016

Period	Children 0-14 (%)	Youth 15-34 (%)	Elderly 60+ (%)	Total (%)
2002-2003	-0.38	2.14	2.58	1.22
2003-2004	-0.23	2.13	2.62	1.25
2004-2005	-0.06	2.09	2.66	1.28
2005-2006	0.09	2.06	2.67	1.31
2006-2007	0.25	1.99	2.69	1.34
2007-2008	0.54	1.76	2.68	1.37
2008-2009	0.60	1.74	2.71	1.40
2009-2010	0.75	1.63	2.77	1.43
2010-2011	0.83	1.51	2.82	1.46
2011-2012	0.98	1.31	2.85	1.49
2012-2013	1.17	1.11	2.89	1.52
2013-2014	1.22	1.06	2.93	1.55
2014-2015	1.27	1.01	2.98	1.59
2015-2016	1.25	0.85	2.04	1.62

Source: Statista (2017)

Although not proportionally connected, South Africa's economic growth rate was lower than the population growth rate in the 2015/16 financial year. While economic growth stood at 1.3 percent and 0.3 percent in 2015 and 2016, respectively, the population growth rate was 1.59 and 1.62 respectively. The above relationship will lead to scarcity in terms of resources and may lead to conditions such an increase in poverty, ill-health and poor living conditions, accompanied by other related adverse conditions. The relationship between economic growth and population growth is presented in Table 3.14.

Economic growth rose at a relatively higher percentage in 2010 until 2015, but the decline started in 2014. Although the synergy and the relationship between economic and population growth might need a special study. A decrease in economic growth, with an increase in population growth, will result in shortage of food, employment, health facilities, and scarcity of resources.

Table 3.14: Comparing South Africa's economic growth to population growth

	2010	2011	2012	2013	2014	2015	2016	2017
Sub-Saharan Africa	7.0	5.0	4.3	5.3	5.1	3.4	1.4	2.6
Of which:								
Oil-exporting countries	9.2	4.7	3.9	5.7	5.9	2.6	−1.4	0.9
Of which: Nigeria	11.3	4.9	4.3	5.4	6.3	2.7	−1.5	0.8
Middle-income countries	6.9	4.5	4.3	4.7	4.6	2.7	0.5	1.8
Of which: South Africa	3.0	3.3	2.2	2.5	1.7	1.3	0.3	0.7
Low-income countries	7.2	6.9	4.5	7.2	6.8	5.6	4.4	5.2
World economic growth	5.4	4.2	3.5	3.4	3.5	3.4	3.1	3.5

		2010	2011	2012	2013	2014	2015	2016
Comparing South Africa's economic growth with population growth	Economic growth	3.0	3.3	2.2	2.5	1.7	1.3	0.3
	Population growth	1.43	1.46	1.49	1.52	1.55	1.59	1.62

Source: Statista (2017)

Roux (2011) indicates that if production has grown by 10 percent in a specific financial year and population growth was 10 percent, does this mean that there are more goods available in that specific year? He indicated that this is not the case since the real GDP per capita would be unchanged. But if the population has risen by 4 percent, then GDP per capita would have risen by 6 percent. The economic growth of the country was at 0.3 against the population growth of 1.62. The country must increase its growth per capita in order to address conditions such as poverty, employment , health standards and other economic indicators. Quasi taxes can help to stimulate growth in the country by using revenues from these taxes in line with the determinants of economic growth, to address elements of population growth.

3.2.6 Government Spending and Consumption

South Africa's spending has been increasing and was at 48.3 percent of GDP in 2017. The country is just behind Mexico, which is at 49.7 and is followed by Germany, which has a percentage spending of 43.7 percent of GDP. The position of the country in terms of spending in relation to other countries is expressed in Figure 3.22.

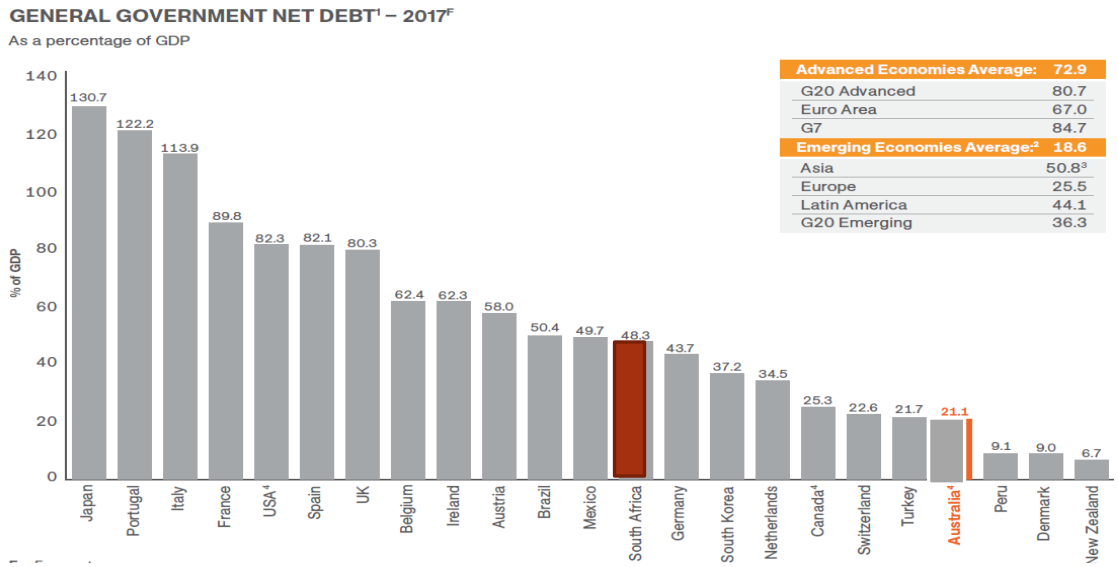


Figure 3.22: Australian Government debt compared to that of South Africa and other countries

Generally, government spending is on infrastructure, sanitation and other services. The International Monetary Fund (2017a) estimated the Australian government's net debt at 21.1 percent of GDP in 2017, well below the 72.9 percent forecast for advanced economies as a group (Australian Government, 2017), in Australia's October 2016 Fiscal Monitor. The low level of public sector debt reinforces the Australian government's healthy financial position and sound economic credentials and underpins its strong sovereign ratings. South Africa in contrast has faced sequential downgrading by rating agencies, as presented in Table 3.15.

Table 3.15: South Africa's long-term sovereign rating as at 31 May 2017

South Africa 's long -term sovereign rating 31 May 2017						
	Foreign currency Debt			Local Currency Rating		
	Moody's	S&P	Fitch	Moody's	S&P	Fitch
Rating	Baa2	BB+	BB+	Baa2	BBB-	BB+
Outlook	Negative	Negative	Stable	Negative	Negative	Stable
Date of the last outlook change	Dec - 15	Dec-15	April 14	Dec - 15	Dec-15	April 14
Date of the last rating change	Nov-14	April 17	April 17	Nov-14	April -17	April 17

Source: International Monetary Fund (2017)

The country must improve its consumption and address, among others challenges, its political conditions, since they have a bearing on the economy of the country and may in the long run lead to negative economic growth. Government spending is mainly on services such as sanitation, water supply, state-owned entities and others. The amounts paid from quasi taxes could minimise government spending if used in the supply of these services, but this does not shift the goal post for government as the responsible stakeholder in the supply of these services.

3.2.7 Purchasing Power Parity

Purchasing power parity (PPP) GDP is GDP converted to international dollars using PPP rates (World Bank, 2017). An international dollar has the same purchasing power over GDP as the US dollar has in the United States. GDP is the sum of gross value added by all resident producers in the economy, plus any product taxes and minus any subsidies not included in the value of the products. This is calculated, without making deductions for depreciation of fabricated assets, or for depletion and degradation of natural resources. Data are expressed in current international dollars.

Exchange rates do not always reflect differences in price levels between countries and GDP and GDP per capita estimates are converted into international dollars using PPP rates. PPP rates provide a standard measure in this regard. South Africa was rated 29th in terms of GDP (PPP) in 2016. The information on the increase in the PPP GDP is illustrated in Table 3.16.

Table 3.16: South Africa's PPP GDP from 1990 to 2016

South Africa 's PPP GDP from 1990 to 2016	
Year	PP GDP
1990	235, 395,245.66
2000	345, 745, 194.23
2008	580,651,898.05
2009	576,062,823.64
2010	600, 823,459.85
2011	633,367,849.86
2012	659,311,102.61
2013	686, 636,201.65
2014	710,808,391.88
2015	727,787,801.41
2016	739,419,184.41

Source: World Bank (2017)

3.2.8 Trade Policy

The terms of trade have been stressed as an influencing element of economic growth in developing countries, mainly when they depend on the exports of primary products such as minerals, agricultural products and others. Terms of trade are measured by comparing export and import prices. Trade policies adopted by trade partners (countries), as well as those implemented at home, affect how competitive the country's exports are in the world markets (Barro, 1996).

Onyekwena *et -al* (2014) indicates that there has been a decrease in the intensity of South Africa's exports to the European Union countries from 2000. Figure 3.23 clearly shows the decrease in 2003, and in 2011 there was a downward movement from the average decrease which started in 2003 up to 2010. However, the decrease in the intensity of exports to the European Union countries was offset by an increase in exports to the BRICS countries. This increase started in 1998 and remained stable up to 2007. This region sees the highest intensity of South African exports. This may have been a result of South Africa's admission to the BRIC countries (subsequently forming the BRICS union). The fact that the country's trade policy concerning the BRICS agreements is supporting growth may be seen in the intensity of its exports to the BRICS community.

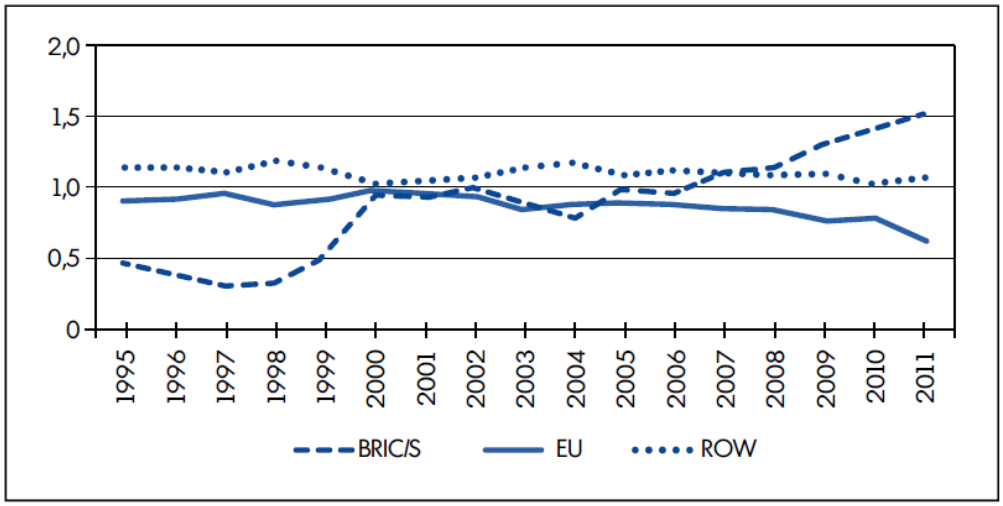


Figure 3.23: The intensity of South Africa's exports to BRIC/S, the EU and the rest of the world (ROW) 1995–2011

Source: (Onyekwena *et -al* 2014)

According to Mazenda (2016), BRICS nations complement each other's trade with beneficial relationships as follows: (i) South Africa, Brazil and Russia are champions of the energy and natural resources sectors, (ii) China is top in manufacturing making full use of readily available cheap labour and raw material from Brazil, Russia and South Africa, and (iii) India specialises in pharmaceuticals and sophisticated technology, including software technology and outsourcing of business processes. South Africa has been the leading exporter with BRICS from 2011 to 2015. The main products that are exported are coal-related products, iron ores and concentrates, and ferro-alloys to Brazil, India and China. The challenge here is that South Africa's trade composition and volumes with the BRICS is an indication of fault lines in the BRICS trade policy, with the fact that the BRICS countries have a very similar resource base and are involved in intra-industry trade.

Onyekwena *et al* (2014) indicates that on aggregate, South Africa has consistently accumulated trade deficits with the EU from 1995 to 2011, and with the Rest of the World (ROW) since 2005, the reverse of its surplus position in the 1990s and early 2000s. By contrast, trade with the rest of BRICS fluctuated from a deficit to a surplus in 2010, helping to ease the country's aggregate trade deficit.

Vickers (2014) presents South Africa as a relatively open economy, only moderately protected by tariffs. Simple average Most-favoured-nation (MFN**)** applied tariff: 7,7 percent (down from 23 percent in the 1990s) with 56 percent of duties set at zero (0) percent. Mazenda (2016) points out that with the exception of Russia who joined the World Trade Organisation (WTO) in 2011, the 2008 (Doha Round) average tariffs imposed on South African exports to the BRICS were about 8 percent in China, 12 percent in Brazil, and 7.7 percent in India.

South Africa is a member of the WTO. This is considered as a major step towards free and preferential trade. South Africa joined the WTO with the objective of gaining access to the preferential markets of developed nations. BRICS entered into various trade agreements outside the BRICS coalition which were detrimental to South Africa, who ended up facing negative preference margins in the group. During the Uruguayan round, South African participation was in the capacity of a developed country, as such there was an endorsement for extensive cuts on the maximum bound tariff rates. Accordingly, export restraints on South African exports to developing nations exceeded those destined for developed countries.

The conclusion which was reached from the above is that the overall growth trajectory in BRICS should not permit the need for reform in key policy areas associated with governance structures to be overlooked and there is a need for a reliable legal framework which encompasses corruption control and effective policy implementation. He recommends that South Africa should accelerate regional integration in Southern Africa and within the ECOWAS, COMESA and SADC tripartite, at the same time promoting the harmonisation of the US and EU through membership in the African Growth and Opportunity Act (AGOA) and the economic partnership agreements.

This gave South Africa a chance of benefiting from the Transpacific Partnership (TPP) and Transatlantic Trade and Investment Partnership (TTIP) trade negotiations. Another recommendation is that exporters should venture into the renewable energy sector as political leverage for the competing sectors in the BRICS.

Vickers (2014) indicates that South Africa ranks among the most open jurisdictions for FDI in the world and provides strong protection for investors in line with high international standards. South Africa is a member of SACU, which was formed in 1910 and is the oldest functioning customs union in the world. The members are South Africa, Botswana, Lesotho, Namibia and Swaziland. The union has adopted a work programme focusing on the following areas:

- to promote regional industrial development,
- facilitate trade,
- review revenue-sharing arrangement,
- establish common institutions while preserving policy space for member states, and
- promote unified engagement in trade negotiations with third parties.

The trade policies and guidelines on services and goods must be ideal and always have in their centre the role of foreign exchange control in relation to economic growth of the country.

3.2.9 Rule of Law in South Africa

Barro (2003) points out that the rule of law comes from a subjective measure provided in the International Country Risk Guide by the international consulting company Political Risk Services. From the assessment, it was established that an increase in

the rule of law by 0.26 percent for 1985 to 1994 would raise the growth rate on impact by 0.005 percent. An increase in the rule of law will thus lead to an increase in economic growth. Information on the relationship between the rule of law and economic growth is presented in Figure 3.24.

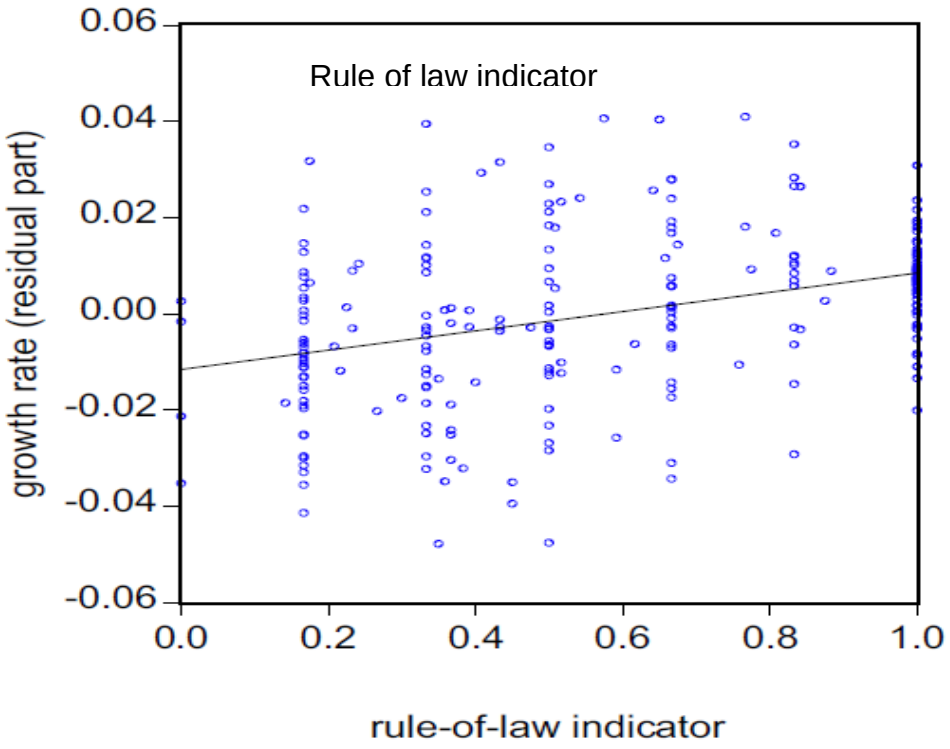


Figure 3.24: Rule-of-law indicator

Source: Burro (2003)

South Africa is rated number 43 in the global ranking with a score of 0.59 . The score ranges from 0.0 to 1.0.

3.3 Chapter Summary

Growth is derived from the determinants of economic growth. This study has outlined and assessed these determinants in order to identify which ones can be better supported by quasi taxes. Any policy document, including documents related to these quasi taxes that seek to support economic growth, must therefore take into account the manner in which the above determents of economic growth will be catered for, both technically and financially. The following chapter is on the case study of the ways in which and how much mining companies pay quasi taxes in South Africa. It was established that one of the main economic growth drivers is not adequately supported in South Africa, compared to other countries. There has been a deterioration in

research and development human capital in the CSIR and MINTEK, particularly for long term research, except in trackless mining and rock engineering (these two have limited life). For the sector to have meaningful contribution, research in the mining industries needs to be supported both technically and financially. Revenues from quasi taxes can be structured and used to some extent to address the above. This is also applicable to the other determinants of economic growth. There must be a system which can be used to quantify and apportion the revenues to meet a certain level for the determinants to contribute to economic growth.

The following chapter presents the case study of quasi taxes in the South African Mining Industry.

4 CASE STUDY: THE EFFECTS OF QUASI TAXES ON SOUTH AFRICAN MINING COMPANIES

A survey was conducted to assess the properties of quasi taxes and their effect on the South African government and mining companies, as well as the other companies they affect. The selection of companies for the sample was based on the following criteria:

- their listing on the Johannesburg Stock Exchange;
- their functional currencies;
- related effects from quasi taxes such as the nature of contribution to government via communities; and
- provision made for environmental costs.

The research needed at least three companies that are affected by the quasi taxes listed above and which are operating in South Africa. It was established that the companies that will indicate their quasi taxes are the public companies on the Johannesburg Stock Exchange (JSE). The companies were therefore randomly selected from the Johannesburg Stock Exchange (JSE), since it is anticipated that they are experiencing the same regulatory environment in terms of quasi taxes, particularly in South Africa. These were grouped together since they are considered to be public companies and for the scale of this research, three companies are enough to provide an average in terms of the quasi taxes.

Quasi taxes play a role as modifying factors for companies that are reporting in terms of the SAMREC and SAMVAL codes (and other CRISCO codes). These quasi taxes include, among others, discount rates and foreign exchange rates (as a result of the controls), environmental costs, and social considerations. There is currently a court case between companies that are members of the Chamber of Mines of South Africa and the authorities in terms of BEE transactions. There is also another dispute in relation to the Mining Charter. Table 4.1 presents the effects of quasi taxes paid by the various mining companies on different communities. This information was extracted in regard to their respective contributions to rehabilitation, their foreign exchange earnings, and their contribution to BEE, which is the equivalent of or similar to government equity on mining projects. The contribution of mining through environmental costs, foreign exchange controls, government equity and contribution to communities are represented by Table 4.1, Table 4.2, Table 4.3 and Table 4.4 respectively.

Table 4.1: Assessment of the effects of environmental costs and performance bonds from mining companies and elements of economic growth

ENVIRONMENTAL COSTS AND PERFORMANCE BONDS			
		Comments on the characteristics of a good tax regime	**General comments or mitigation**
Implats Ltd	The group has an amount of R1,081 million in the form of **bank guarantees to** the DMR. This has increased from approximately R840 (R million) in 2015. The company uses a discount rate which is the long-term risk-free rate as indicated by the government bonds, which ranged between 8,7 percent and 9,5 percent (2015: 8,3 percent and 9 percent) at the time of calculation. The NPV of current rehabilitation estimates is based on the assumption of a Long-term real discount rate of 2,5 percent (2015: 2,4 percent).	Inherently uncertain in almost all geographical areas.	Regardless of country, this quasi tax is inherently uncertain and the risk increases with operations that have long life of mine. Current damage caused, timing and amount of future costs to be incurred to rehabilitate the mine sites, estimate ***future inflation, exchange rates and discount rates***. Trust funds are recorded under non-current assets. Rehabilitation costs are included in the list of elements that are critical to project uncertainty in financial statements. Inaccurate assumptions in assessments made for any of these judgements and estimates could have a significant impact on financial results, thereby having critical effects on the NPV of projects and hinder potential growth in this regard. In its trust, the company has made provision in the **form of bonds amounting to US$153 million.** This amount has just increased. This trust is administered as indicated above thereby resulting in secondary costs.
Anglo American Ltd	Material environmental incidents are reported on, together with efforts made to reduce energy and natural resource consumption, and to generally reduce the impact of the Group's operations on the environment. This will result in savings. The group has non-current assets (trust fund) to the amount of approximately US$350 million		
AngloGold Ashanti Ltd	The company has an amount of R95 million to cater for environmental rehabilitation. The company has reduced energy usage per ton treated from 0,29 to 0,27 GJ/t. The company has total rehabilitation liabilities of US$95,00 which increased from US$84 to US$95 from 2014 to 2015.		

	The company trust fund is administered by a third party and amounts to US$69 million. The cash in trust funds is ring-fenced by cash restricted for use.		

Table 4.2: Assessment of the effects of foreign exchange control from mining companies and elements of economic growth

FOREIGN EXCHANGE CONTROLS			
		Comments on the characteristics of a good tax regime	**General comments or mitigation**
Implats Ltd	The company had a foreign exchange gain of approximately R388 million from its R288 million in the previous year.		Company A has entered into a cross country interest rate swap (CCIRS) amounting to US$ 200 million to hedge certain aspects of the foreign exchange risk on the US$ convertible bonds.
Anglo American Ltd	In the annual report for the 2015/2016 financial year, the South African rand was among the currencies that influence cost. The group is however not hedging this risk, given the long-term correlation with commodity prices and the diversified nature of the group. The net assets of the Group increased by $3 billion and these reflect a reduction in net debt and an increase in foreign exchange gains relating to operations in Australian dollar and South African rand ***functional currencies.***		
AngloGold Ashanti Ltd	Mining Company C. Foreign exchange risk arises on financial instruments that are dominated in foreign currencies. Sales and purchase that are not in the functional currency. Company C indicated that it finances its working capital and development costs with local facilities (South African rand). The gold market is dominated by US pricing and that exposes the company to foreign exchange risks.		

Table 4.3: Assessment of the effects of Black Economic Empowerment from mining companies and elements of economic growth

GOVERNMENT EQUITY : BEE, COMMUNITIES ESOPS			
		Comments on the characteristics of a good tax regime	**General comments or mitigation**
Implats Ltd	The company has exceeded the 26 percent of its South African operation.	There is no certainty on the once empowered always empowered in this regard. This also affects the clarity element of a good tax regime and will affect planning and/or efficiency at a later stage	**Company A,** leverages elements of the mining charter in its company performance thereby exceeding its value creation potential. The value is recorded as a share-based payment which is in line with the principle contained in the South African interpretation AC 503 Accounting for BEE transitions. According to Company C, there is a declaratory order from the High Court to seek clarity on the matter. The revised Mining Charter ensures the promotion of meaningful participation by black people and aims to bring regulatory certainty to leverage investments in the mining sector.
Anglo American Ltd	The company owns 73 percent of the shares. The remaining shares are in BEE ownership. They form part of the company non-operating special items – the group asset portfolio.		
AngloGold Ashanti Ltd	-the company has achieved the required 26 % BEE requirements but it is still waiting for the court interdict between the Chamber of Mines of South Africa and the court on the so called “once empowered always empowered”.		

Table 4.4: Assessment of the effects of contribution to communities by mining companies and elements of economic growth

CONTRIBUTION TO COMMUNITIES			
		Comments on the characteristics of a good tax regime	**General comments or mitigation**
Implats Ltd	The company has established that there is youth unemployment; it thus indicates that this will be addressed by providing training, focused recruitment and giving learnerships. The company has spent close to R9,1 million on community development.	Company A is supporting transparency by engaging with government officials and communities; the main reason is to **transparently demonstrate the sharing of profit from** the mining operations. The most problematic aspect is stability as result of rent-seeking behaviour; this may result from communities demanding more than what is in the approved SLP or it may be fuelled by mining companies that do not fully implement their contributions to communities. Company A indicated that it has established an ad hoc committee to identify core mining opportunities for local businesses while ensuring a fair tender process.	There have been operational disruptions as a result of community protests. The company indicated that it managed these through **proactive engagements** with government officials and communities. According to Company A, there is policy risk arising from change in legislation in South Africa and it rates it under item 5 on its top ten strategic risks. Company A indicated that operations are facing heightened stakeholder Expectations on a range of fronts such as communities making increasingly vocal demands for economic opportunities and improved local service delivery among other things. .
Anglo American	The company has spent approximately US$40 million in South Africa for aspects such as community development, education and training, water and sanitation, health and welfare, energy and climate change and others.		
AngloGold Ashanti Ltd	The company has spent an amount of close to R88 million which was spent on community development, of which R5m was towards the Social and Institutional Development Fund, R55m on community human resources, and R28m on LED.		

5 THE EFFECTS OF QUASI TAXES ON INVESTMENT DECISIONS AND LESSONS LEARNT FROM OTHER REGIONS (COUNTRIES)

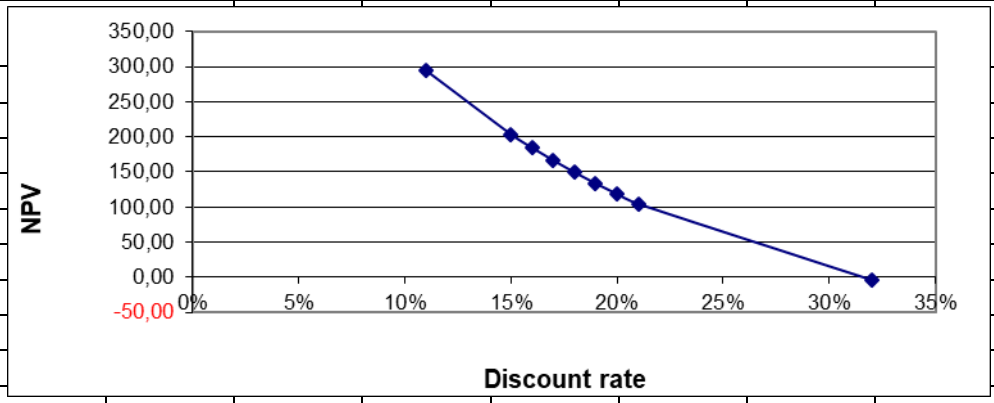
5.1 The Effects of Quasi Taxes on Investment Decisions

The effects of quasi taxes may be more severe when considering investment decisions, than when projecting their direct cost in a financial model of a mining project. The relationship of the NPV to the risk adjusted DCF may lead to a reversal in terms of mining investment as a result of perceived risk. The relationship on how quasi taxes can affect the discounted cash flow method is presented by Table 2.7 and this should be used in conjunction with appendix A. The impacts of quasi taxes on decision-making for mine investment and mine planning are presented in Table 5.1. For example a mining company may be making asumptions and planning to invest in South Africa. For the purpose of this section (DCF consideration), the data will start from actual cash flow after tax. Regardless of all investment considerations listed by Neil 1992 and Otto 1992, such as equity control or mineral ownership, foreign exchange control, attractive geology and others; mining companies also use a method such as the DCF. In the consideration of the method above, companies may apportion risks as per the prevailing conditions on the ground to various countries. This may affect a discount rate and the ultimate return on investment. This may result in a divestment or investment decision.

Table 5.1: The effects of quasi taxes on investment decision-making and mine planning using the DCF method

ABC Mining company (Pty) Ltd			Year 1	Year 2	year 3	year 4	year 5	year 6	year 7	
Actual cash flow after tax (nominal)	R mil		-194,00	-168,00	60,00	140,00	170,00	510,00	200,00	
Discounted cashflow after-tax (nominal)	R mil	13,00%	-174,77	136,35	43,87	92,22	100,89	272,67	96,63	294,85
Net Present Value, NPV (nominal)	R mil		294,85							
Internal Rate of Return, IRR (nominal)			31%							
REAL TERMS (2018)										
Inflation rate & deflation factors		8%	0,926	0,857	0,794	0,735	0,681	0,630	0,583	
De-escalated cash flows after tax (real)			-179,63	-144,03	47,63	102,90	115,70	321,39	116,70	
Discounted cash flows after tax (real)		4,63%	-171,68	-131,57	41,58	85,86	92,27	244,96	85,01	246,43
Net Present Value, NPV (real)			246,43							
IRR (real)			22%							

Discount Rate	NPV
11%	294,85
15%	203,96
16%	184,70
17%	166,63
18%	149,68
19%	133,77
20%	118,84
21%	104,81
32%	-3,71



Source: Mine Financial Valuation (2012)

An increase in the discount rate does not mean a proportional decrease in the NPV. However, if there is a decrease it could potentially be severe, as indicated in Table 5.1. The initial NPV was R294.11 million at 11 percent. A 4 percent increase in the discount rate led to an amount of R203.29 million. The two increases in the percentage of the discount rate (17 and 18 percent) was followed by another decrease in NPV of R133.77 million at 19 percent. At 32 percent, the projections show -R371 which has already passed the Internal Rate of Return. The decrease in the NPV does not correspondingly merge the percentage of the increase in the discount rate. There is therefore a need for policy to be upgraded to provide for market failures in terms of the social and environmental effects associated with mining. This is because as the perception of these effects becomes more negative, if the project is deemed risky, the discount rate increases. This affects the probability of mining investments in the country and limits FDI in the mining sector.

5.2 Clustering of Mining Projects

Lessons have been learnt from certain projects in South Africa, such as the Maputo Corridor and others. For example, the clustering of goods and services leads to long-term sustainable economic growth. Lessons have also been learnt from other regions in the African continent, such as the Economic Community of West African States (ECOWAS). The ECOWAS region has relatively higher economic growth compared to SADC.

South Africa and its neighbouring countries are endowed with various strategic minerals, but in order to realise growth from these mineral resources projects should be clustered and, where possible, clustering should be done at a regional level. The social and environmental effects and the economic effects do not have political boundaries. The economic growth of the SADC and the ECOWAS states is presented in Table 5.2.

Table 5.2: Real GDP growth of SADC, ECOWAS and other regions

	2004-2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Sub-Saharan Africa	6.8	4.0	6.6	5.0	4.3	5.2	5.1	3.4	3.0	4.0
Median	4.8	3.3	6.0	4.8	4.6	5.1	4.7	4.0	4.1	4.7
Excluding South Africa and Nigeria	6.8	3.7	6.2	5.9	5.3	6.5	5.8	4.7	4.4	5.4
Oil-exporting countries	9.2	7.0	8.5	4.6	3.8	5.7	5.9	2.6	2.2	3.4
Excluding Nigeria	10.7	1.7	4.2	3.7	2.4	6.5	4.8	2.3	1.8	3.3
Oil-importing countries	5.3	2.0	5.3	5.2	4.7	4.8	4.4	4.0	3.6	4.4
Excluding South Africa	5.6	4.4	6.8	6.6	6.2	6.4	6.1	5.4	5.2	6.0
Middle-income countries	6.9	3.8	6.5	4.5	4.2	4.6	4.6	2.6	2.5	3.4
Excluding South Africa	7.3	2.5	5.4	5.2	6.0	5.9	4.9	3.8	4.2	5.0
Low-income countries	6.3	5.1	7.0	6.6	4.5	7.1	6.6	5.7	4.7	5.8
Excluding low -income fragile countries	7.7	6.3	7.6	7.6	6.2	7.0	7.2	7.2	5.6	6.5
Fragile countries	3.5	3.3	5.6	3.1	3.4	7.2	6.1	3.9	4.2	5.2
CFA franc zone	4.6	2.1	4.6	2.3	6.0	4.4	5.7	4.4	4.6	5.2
CEMAC	5.7	1.1	4.8	3.6	5.4	2.7	4.9	2.0	2.3	3.4
WAEMU	3.6	2.9	4.4	1.2	6.5	5.9	6.4	6.4	6.5	6.6
COMESA (SSA members)	6.2	5.6	7.9	7.1	5.9	6.1	6.5	6.0	4.6	5.6
EAC-5	6.2	5.2	7.4	6.9	4.6	5.8	5.9	5.8	6.1	6.3
ECOWAS	7.4	7.5	8.8	5.0	5.1	5.7	6.0	3.1	3.2	4.3
SADC	6.2	0.5	4.2	4.3	3.7	4.2	3.5	2.7	2.4	2.9

Mining contributed up to 74 percent to export income in 2004 and 86 percent in 2005 (International Union for Conservation of Nature, 2012). In Mali, it contributes up to 70 percent to the export income.

Table 5.3: Macroeconomic contribution of mining in some selected ECOWAS states from 2004 to 2009.

Country	Year	Contribution of mining sector to GNP (%)	Contribution of mining sector to export income (%)	Contribution of the oil sector to export income (%)
Burkina	2006	0.7		
	2009	2.8	41	
Mali	2006	15	70	
Ghana	2006	12		
	2005		35	
Guinee	2004		74	
	2005		86	
Togo	2008	4.8		
Mauritania	2006		25	25
Niger	2008	15		

Source: International Union for Conservation of Nature (IUCN) (2012)

The lessons that were learnt include the manner in which revenues from mining operations are used. The countries under ECOWAS have relatively higher economic growth relative to the SADC countries. The SADC countries include countries such as South Africa, Zimbabwe, Botswana, Mozambique, Zambia, Tanzania, Angola, Lesotho, Malawi, and Swaziland, while the ECOWAS countries include Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo. Business Sweden (2016) indicates that the region has the mining sector as a vital contributor to the GDP of the West African countries and this is anticipated to continue over the next couple of years. Given the expectation that mining costs in South Africa will rise significantly, West Africa might be in line for a golden era as international mining companies will be attracted by low production costs and increased stability.

Since social and environmental impacts do not have boundaries and/or are trans-boundary, a regional approach is recommended in order to attain real and inclusive economic growth from the quasi taxes (World Bank, 2010). This collaboration could involve two or more countries, as in the case of Guinea, Liberia and Sierra Leone. South Africa has the classic example of the Maputo Development Corridor project,

which focused on rehabilitating the old rail corridor running between Johannesburg and Maputo, along with investments in high-voltage power lines and a toll road running along the same corridor. Additional investments along the corridor were made in a BHP Billiton/Mozal Aluminium Smelter in Maputo, upgrades to the port of Maputo, and a gas pipeline, as well as additional industrial parks and tourism facilities. Other examples of this cluster and corridor approach include the Steelpoort Valley platinum mine cluster in South Africa, and the Moatize coal mine in Malawi, which used public–private partnerships to provide transportation and other infrastructure development along with social investments that enable other economic development activities along the corridors (World Bank 2010).

Environmental pollution or socioeconomic effects (positive or negative) do not have boundaries such as political boundaries, therefore environmental rehabilitation and social considerations must be done in clusters and must be regional (Figure 5.1).

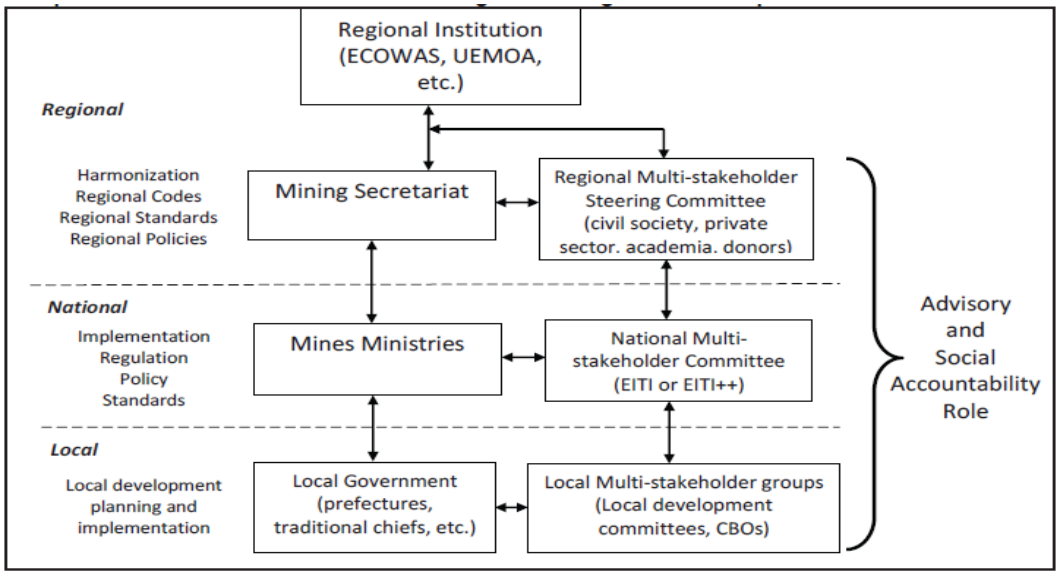


Figure 5.1: Proposed multi-stakeholder framework for regional mining sector development

Source: World Bank Group (2010)

Sigh and Evans (2009) indicate that natural resources are neither a curse nor a panacea for creating sustainable development. Natural resources offer a comparative advantage which can be used to create competitive advantage, through the development of production complexes or clusters, which will lead to sustainable economic growth. Quasi taxes should ideally contribute through a Regional Development Fund to the development of the SADC trade infrastructure, which is

currently handicapped by poor or non-existent trade infrastructure. The mandate of the fund is to (Solomon, 2012):

- facilitate SADC inter-regional trade by investing in trade infrastructure;
- open up regional markets for South African goods and services and for imports from the region; and
- enhance regional economic and political integration.

Where there is a need for regional or comprehensive growth projects, the initiatives (approaches) must not be treated as being strictly for local economic projects of mining companies. There should be robust reform in which the public sector intervenes in making such initiatives a reality. In other words, this should be done in the form of a public–private partnership. Importantly, the idea is not to harness the revenues from mining companies or limit them on compliance but to attain sustainable development.

Solomon (2012) also points out that the pooling of resources is recommended through clustered mining companies geographically to maximise the development potential of the local communities. He further states that mine closure plans should incorporate non-mining economic activities as sustainable alternatives. This can also help in accessing the 100GW in excess electricity in the form of hydropower. This may contribute to a reduced carbon footprint by the SADC community.

6 RESEARCH SUMMARY AND CONCLUSIONS

This research entailed assessing the effects of quasi taxes in mining on the economic growth of the country. The work was motivated by, among other things, the current short-term growth of the country.

The objectives of the research were (i) to assess the extent to which quasi taxes are contributing to the economic growth of South Africa; (ii) to assess how the country can enhance the effectiveness of quasi taxes as determinants of economic growth of South Africa; (iii) to assess whether quasi taxes possess the attributes of a good mining tax regime which can maximise their contribution to the economy; (iv) to create awareness of and reveal the extent to which inadequate planning in terms of these costs (quasi taxes) can affect the NPVs of mining projects; and (v) to determine how the item (iv) can affect potential economic growth.

Quasi taxes are defined as being very similar to taxes; although they contribute to National Treasury, their effect is felt directly by communities. However, they are mandatory, which is why they are classified as taxes. For example, when contributing to community development, the revenue is channelled directly to community development and SARS benefits in the form of VAT paid during the procurement of services and goods; however, this aspect is beyond the scope of this study. The financial effects of the funds provided by mining companies or community development can only be compared to the income tax royalties that are paid in a particular year. For example, in 2015 the mining industry contributed R2 billion to community development, R3,7 billion in the form of royalties and R12,5 billion in taxes. The effects of this quasi tax (contribution to communities) are graphically expressed in Figure 6.1.

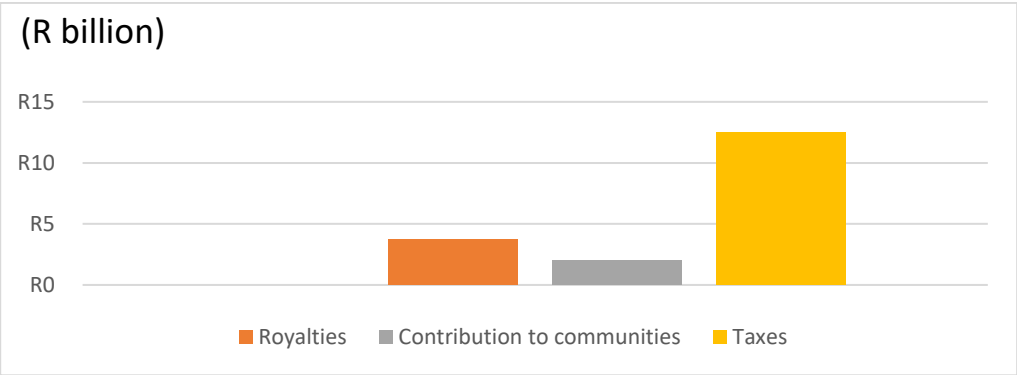


Figure 6.1: The comparison of the amount paid in terms of royalties, contribution to communities and taxes in 2014 (Source: Chamber of Mines (2016))

The amount paid by mining companies is 54 percent of the amount paid in terms of royalties, but the effects of the revenues captured can only contribute to economic growth if they are used in line with the determinants of economic growth outlined in this study, as well as others not listed. Where possible, they should be used after the clustering approach has been applied. This is because most of the determinants of economic growth in this study do not have municipal boundaries; rather this contribution to communities might need to be on a macro scale and might need to be linked to other local, provincial, national or regional projects. This project therefore does not stop contributing to local communities, but is progressive in the form of economic growth perspectives. The fruit of this is sustainable and is intended for long-term gains.

In addition, mining companies contribute to communities in the form of equity. It has been found that mining companies included in the top 100 JSE companies contributed approximately R100 billion, that is 56 percent, in the form of corporate tax in the 2014 financial year. This impact is felt not only in the form of financial gains to entrepreneurs but also in the promotion of inclusive and sustainable economic growth in the sense that it distributes the revenues from mining operations to all people of South Africa from different demographics. This will highlight economic exclusions from mining revenues in the long run. Since the promulgation of the MPRDA in 2004, there has been an increase in terms of real mining GFCF, which amounted to almost R25 billion in 2008 from around R15 billion in 2001. The contribution of mining in terms of export revenue is an average of 31.66 percent of the total export gains of the country. Therefore, the effects of export and/or foreign exchange controls contribute to the growth of South Africa. These contributions are clearly demonstrated in Table 6.1.

Table 6.1: The contribution of exports from mining to total goods exports and the GDP of South Africa

Year	National Gross		Contribution to National total goods exports	
	Domestic Product	From Mining	Total Exports	From Mining
	R' million	R' million	R' million	R' million
2003	1272537	82770	291434	86747
2004	1415237	91198	310525	89546
2005	1401067	105992	358361	102486
2006	1572319	132301	447690	138878
2007	1792076	156970	533791	161755
2008	2033207	196525	704293	219593
2009	2174512	196521	556432	176837
2010	2412490	227117	625359	224956
2011	2670504	260381	746518	282012
2012	2835087	221731	767230	269119

It was established during the assessment of various mining companies under Table 4.4 that one of the outstanding attributes is transparency in terms of how they are perceived by communities, mining companies and the government. The lack of transparency by mining companies with other attributes of a good tax regime may compromise the objective of economic growth as discussed in the research. Most of the projects that are carried out in South Africa tend to be small and they are done by individual companies. In order for these projects to make a contribution to economic growth, such as the development of technology, these companies may need to join together and where possible form a partnership with government. There are concerns that economic growth will not be achieved until all parties (government, communities, and mining companies) understand that this is being done not merely for the sake of compliance, but for economic growth and ultimately sustainable development.

The country lacks tools to manage community expectations and/or perceived demand; hence, it must promote the development and approval of CEPs. These have yielded fruit, since they minimise risks as they identify relevant communities and describe how, when and what engagement will occur with those communities during all stages of a mining project. Moreover, in Australia they are legislated for. Another benefit is that they assist in managing social effects, which can improve relationships with local communities (Victoria State Government , 2017).

However, this should not incur extra costs, but form part of the documents to be approved even though its objectives are significant in terms of cost and benefit (cost-benefit analysis). This will increase the element of transparency which seems to be lacking among affected parties. The research has also assessed the determinants of economic growth in order to delineate the extent to which these taxes can contribute to economic growth. This include areas such as technology progress and research and development. The country is experiencing brain drain in research Institutions such as the CSIR or and MINTEK. The research that is conducted in relation to the mining sector are short term and not formal and cannot adequately address issues of economic growth.

The quasi taxes must also be used to address school enrolment. This can be achieved by LED projects. This means that mining companies must not default in the building of schools, libraries or any infrastructure which will promote school enrolment. Any policy document or statement must not contradict or disturb the contribution of mining companies through foreign exchange controls by foreign earnings, since they contribute an amount which is equivalent to 0.77 in terms of mining export earnings per unit of GDP created. The amount contributed by mining exports from the year 2007 to 2016 is about R 1,028,628 (million nominal terms).

Quasi taxes contribute to economic growth, either directly through the GDP, or when it is paid to beneficiaries in the form of shares, community benefits, and other. The industry contributes through the payment of environmental costs for rehabilitation of disturbed areas that can be used in future for other land uses, mitigation of climate change, contribution to the GDP through management of trusts funds, bank guarantees etc.

The quasi taxes helps to address the past imbalances, sharing of revenues, inclusive economic growth, taxes that are paid during payment of shareholders etc. The industry also contributes through creation of jobs, educational support , health related projects such as building of clinics, infrastructure, poverty alleviation and skills development when it comes to contribution to communities (as a quasi tax).

The taxation of mining companies has an effect on the economic growth of the country, either directly on the GDP, or indirectly on communities in terms of influencing and promoting the determinants of economic growth in the form of assisting in skilling and

educating communities, as in the case of Companies that were sampled for the research under Section 4 of this report.

The above are summarised in State equity in South Africa (which normally takes the form of BEE, communities or ESOPS) which assists government to achieve transformation in the mining industry, but also helps in the realisation of equity in the sharing of revenues from mineral resources, inclusive of sustainable growth. This is even more important because it involves the employees that are physically affected by the extraction of the mineral resources, as well as the affected communities. The government is therefore better off focusing on taxing and regulating mining projects, rather than being directly involved as an equity participant. It should also be borne in mind that the economic impact of an equity share can, in principle, be replicated by tax instruments.

The above is illustrated by Figure 6.2



Figure 6.2: Quasi taxes with a list of their respective effects on economic growth

Source: Otto & Cordes 2002

In terms of government equity to mineral projects, it can be observed when a carried interest is equivalent to a resource rent tax, with the equity share equal to the tax rate and the interest rate on the carry equal to the threshold discount rate. According to Sunley and Baunsgaard (2001), there are also possible conflicts of interest when the government's role as regulator includes overseeing the environmental or social impact of a project, which may differ from its objectives as an equity shareholder.

Using of revenues to finance and support the determinant of economic growth is not adequate and not sustainable without meeting the conditions of a good tax regime such as neutrality, equality social justice (recent conditions). An ideal environment for the use of quasi taxes in economic growth is represented by Figure 6.3.

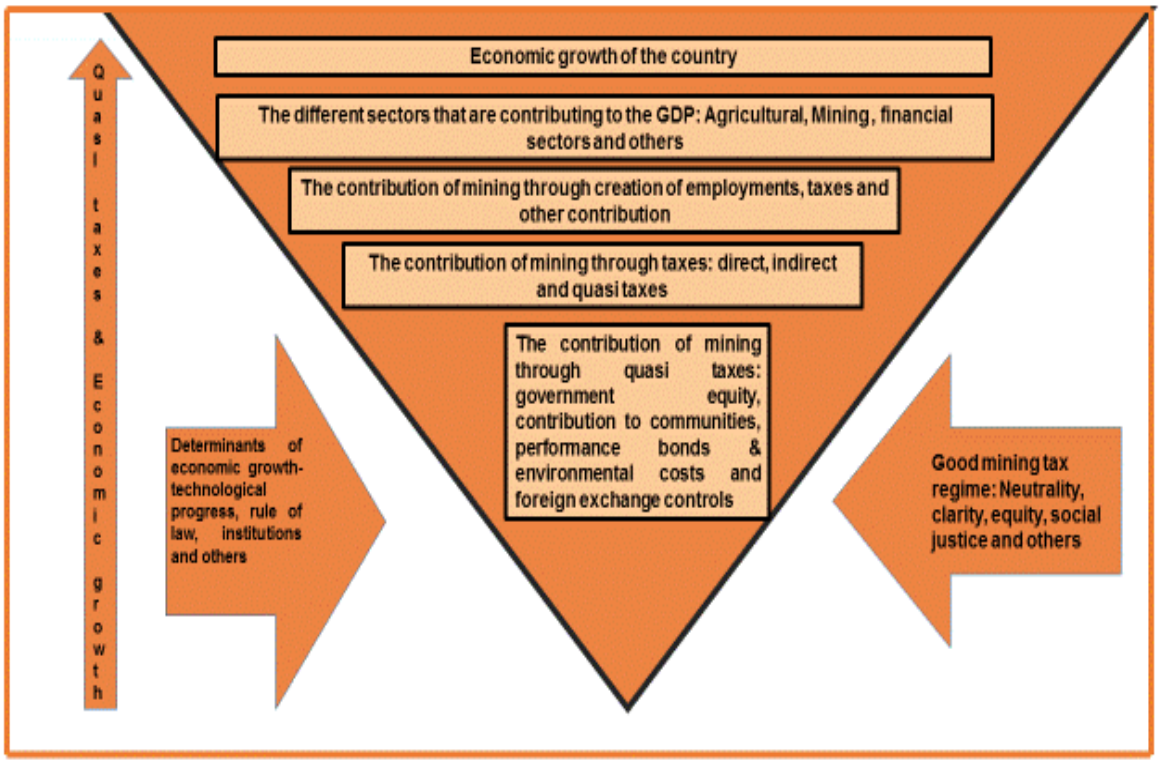


Figure 6.3: An ideal environment for quasi taxes from mining to support economic growth

Sources: Barro (1996), Otto & Cordes 2002, Rossi (2012) and De Jager (2014) and the Davis Tax Committee Interim Report (2015)

The determinants of economic growth were extracted from Barro (1996), Rossi (2012) and De Jager (2014) and are based on Solow's 1956 model of economic growth. They

include human capital (schooling and health), physical capital, natural resources (depend on technological progress), fertility rate, government spending and consumption (such as infrastructure and sanitation), index of maintenance of rule of law, change in terms of trade, index on democracy and inflation rate. These will always be synergised and form part of the criteria when capturing and using quasi taxes in order to realise their value.

Mining companies may use the DCF method in their investment decisions and quasi taxes may be counted as risks as indicated. In consideration of the method above, companies may apportion risk as per the prevailing condictions on the ground to various countries. This may affect a discount rate and and the ultimatelly the return on investment. This may result in a divestment from the country. An increase in the discount rate does not mean a direct proportional decrease in the NPV. However, if there is a decrease it could potentially be severe, as indicated in Table 5.1. The initial NPV was R294.11 million at 11 percent. A 4 percent increase in the discount rate led to an amount of R203.29 million. Quasi taxes have impacts on mining investment decisions and can inhibit potential economic growth of the country.

Quasi taxes form part of the sensitivity analysis and/or modifying factors for conversion of mineral resources to mineral reserves; hence, they are very significant for mine projects and mineral policy, as they may influence size and/or proportionality in terms of sharing of mineral profit.

7 RECOMMENDATIONS

It is recommended that research be done on the contribution of environmental costs to the economic growth of South Africa. Such work could focus on how the captured revenue assists in the rehabilitation of disturbed land, thereby assisting in terms of natural capital per person in the country. Research should also be carried out to estimate how much rehabilitated land from tailings dams and other mining operations have been re-used.

Further research could also include the classification of the new zoned land and land capabilities of this rehabilitated land. More work needs to be done on the assessment of how quasi taxes affect mining investment decisions in the various forms of cost analysis.

It is recommended that in order to prevent disagreements between mining companies and communities, South Africa must adopt Community Engagement Plans (CEPs). According to the Victoria State Government (2017), in order to manage community expectations, other countries are opting for the development and approval of CEPs. This has yielded fruit, since it minimises risks by identifying relevant communities and describing how, when and what engagement will occur with those communities during all stages of a mining project. These plans are also legislated. Another benefit is that it is an effective way to manage social effects which can improve relationships with local communities. A good example is the state of Victoria in Australia.

In order to minimise overregulation and additional costs, the CEP can be included in one of the documents that are submitted for evaluation and approval. However, this might need to be regulated, since other parties might not agree on its implementation, even if it is for their benefit. This will also engender confidence on the part of the international mining investment organisations, since they will be sure that the engagement will be structured and regulated as per the CEP.

Community Development Agreements (CDA) activities must be implemented, so that the beneficiary communities will have a better understanding of funding levels, which is a useful way to manage expectations. Such a provision also aids CDA negotiations because the funding requirement is set out in the law and is not open to negotiation. In discussions with industry, the author learned that many mines voluntarily expend

around 2 percent of gross revenues on CSR programmes, but the amount is highly variable from project to project.

The determinants of economic growth must be considered in consensus and agreements in relation to the use of revenues from quasi taxes from mining developments. In terms of financing of projects to communities, it is recommended that where possible, financing should be shared by a group of mining companies or through the formation of Public Private Partnerships (PPPs). However, where this is not possible or practical, a local project could be promoted. From the lessons learnt from ECOWAS, the local governments (municipal IDPs) should partner with mines to form provincial, national and where possible regional projects, in order to meet the requirements for economic growth.

It has been established that the clustering of the projects will yield more positive effects in the form of long-term sustainable economic growth, since the socio-economic and/or environmental impacts do not have boundaries. Therefore, their mitigation (negative impacts) and promotion must, where possible, not be localised. There must be more research on how the ECOWAS region uses natural resources for their economic growth.

The South African authorities must continue to implement macro-economic policies that promote growth, confidence and financial stability. Inflation targeting, a flexible exchange rate and deficit reduction are accordingly appropriate to enhance growth and decrease volatility. The authorities should continue to implement policies that support inclusive growth, since they are very important for growth in the long run (International Monetary Fund, 2017).

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APPENDIX A: RISK CATEGORIES AND WEIGHTS IN MINERAL DEVELOPMENTS

Source: Southern African Institute of Mining and Metallurgy

Category	Risk	Probability	Impact	Risk score
Technical risk	Reserve	High-0.8	High-0.8	Probability x impact
		Medium-0.5	Medium-0.5	
		Low-0.1	Low-0.1	
	Completion	High-0.8	High-0.8	Probability x impact
		Medium-0.5	Medium-0.5	
		Low-0.1	Low-0.1	
	Production	High-0.8	High-0.8	Probability x impact
		Medium-0.5	Medium-0.5	
		Low-0.1	Low-0.1	
Economic risk	Price	High-0.8	High-0.8	Probability x impact
		Medium-0.5	Medium-0.5	
		Low-0.1	Low-0.1	
	Demand	High-0.8	High-0.8	Probability x impact
		Medium-0.5	Medium-0.5	
		Low-0.1	Low-0.1	
	Foreign exchange convertibility	High-0.8	High-0.8	Probability x impact
		Medium-0.5	Medium-0.5	
		Low-0.1	Low-0.1	
Political risk	Currency convertibility	High-0.8	High-0.8	Probability x impact
		Medium-0.5	Medium-0.5	
		Low-0.1	Low-0.1	
	Environment	High-0.8	High-0.8	Probability x impact
		Medium-0.5	Medium-0.5	
		Low-0.1	Low-0.1	
	Tax	High-0.8	High-0.8	Probability x impact
		Medium-0.5	Medium-0.5	
		Low-0.1	Low-0.1	
	Nationali-zation	High-0.8	High-0.8	Probability x impact
		Medium-0.5	Medium-0.5	
		Low-0.1	Low-0.1	

APPENDIX B: GOVERNMENT EQUITY ON MINING PROJECTS (SIMS REPORT 2012)

Forms of state participation: Under all forms of state participation, except the "free" equity form, the most common vehicle for state participation is the SMC. In some countries, however, the state has exercised sector participation without the intermediation of a SMC.	
Free equity participation	In this model, the state could either i) go ahead with investments on its own through its SMC, without private sector involvement; or ii) it could invest *pari passu* (literally on an equal footing or basis) with the private sector from the start of operations by acquiring either a majority or minority interest in an incorporated joint enterprise or a participation share in an unincorporated joint venture (UJV). In the latter case, the state has less than a 100% share but both spend and receive revenue in full proportion to the share each has. The best examples of the first option are found in Middle Eastern oil-rich countries and Mexico. Examples of the second option can be found in both the petroleum and mining sectors, although joint enterprise participation is relatively more common in the mining sector while the UJV route is more typical of oil.
Carried equity participation	Carried equity participation may take several forms. The most frequent case is the "partial carry", usually in the context of a state/private investor UJV. Under this approach, the private investor "carries" or pays the way of its SMC partner through the early stages of a project – exploration, appraisal, and possibly even development – after which, the SMC spends *pari passu* with the private investor, as under full equity participation. The private investor may or may not be compensated for the funds advanced on behalf of the state, and where compensation does occur, it may be with or without interest reflecting the time value of money, and/or "uplift" in recognition of the risks incurred on the state's behalf- The 'uplift' is an agreed multiple of costs. Where recovery of interest on carried costs is explicitly allowed for, the uplift relates only to compensation for risk. Where interest cost recovery is not explicitly provided for, the uplift is expected to cover both interest and risk. A "full carry" occurs where all costs are borne by the private investor and compensation including interest and/or an uplift is paid out of the project itself.
"Free" equity participation	So-called "free" equity participation is a simple grant of an equity interest directly to the state without any financial obligation or compensation to the private investor. Once a feature in mining, where it was sometimes regarded as a payment for the right to exploit the mineral resource, and is still "on the books" in many countries, it is now found only rarely in new agreements (Ghana has it in both its petroleum and mining agreements.).
Free equity participation	In this model, the state could either i) go ahead with investments on its own through its SMC, without private sector involvement; or ii) it could invest pari *passu* (literally on an equal footing or basis) with the private sector from the start of operations by acquiring either a majority or minority interest in an incorporated joint enterprise or a participation share in an unincorporated joint venture (UJV). In the latter case, the state has less than a 100% share but both spends and receives revenue in full proportion to the share it has. The best examples of the first option are found in Middle Eastern oil-rich countries and Mexico. Examples of the second option can be found in both the petroleum and mining sectors, although joint enterprise participation is relatively more common in the mining sector while the UJV route is

ANNEXURE A: SOCIAL AND LABOUR PLAN GUIDELINES

1 INTRODUCTION
1.1 Purpose of the guidelines
1.2 Definitions
1.3 Objectives of the Social and Labour Plan
1.4 Submission of the Social and Labour Plan
1.5 Applicability of the Social and Labour Plan
1.6 Amendment of the Social and Labour Plan
1.7 Reporting on the Social and Labour Plan
2 CONTENTS OF SOCIAL AND LABOUR PLAN
2.1 Preamble
3 HUMAN RESOURCE DEVELOPMENT PROGRAMME
3.1 Compliance with Skills development Legislation
3.2 Skills development plan – Regulation 46 (b) (i)
3.3 Form R Hard-to-fill vacancies
3.4 Career Progression (path) Plan
3.5 Mentorship Plan
3.6 Bursary and Internship Plan
4 EMPLOYMENT EQUITY PLAN
4.1 HDSA in management
5 MINE COMMUNITY DEVELOPMENT
5.1 Social and economic background information (Regulation 46 (c) (i))
5.2 Key economic activities (Regulation 46 (c) (ii))
5.3 Negative Impact of the mining operation
5.4 Infrastructure and poverty eradication projects that the mine would undertake in line with the IDP of the areas and other relevant frameworks in which the mine operates and the major sending areas. (Regulation 46 (c) iv)
5.5 Development Projects
5.6 Project Plan Format
6 MEASURES TO ADDRESS HOUSING AND LIVING CONDITIONS
7 PROCESSES PERTAINING TO MANAGEMENT OF DOWNSCALING AND
RETRENCHMENT
7.1 Establishment of future forum
7.2 Mechanisms to save jobs, provide alternative solutions and procedures for creating job security where job losses cannot be avoided
7.3 Management of retrenchments
7.4 Mechanisms to ameliorate the social and economic impact on individuals, regions and economies where retrenchment or closure of the operation is certain
8 FINANCIAL PROVISION
9 UNDERTAKING

Source: South Africa. Department of Mineral Resources, 2015.