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Wealth inequality and entrepreneurial activity in South Africa: Evidence from the National Income Dynamics Study

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in Entrepreneurship and New Venture Creation

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ABSTRACT

There is currently little empirical research exploring the interaction of wealth inequality, in particular, and entrepreneurship. South Africa is one of the most unequal countries in relation to net wealth distribution. The purpose of this study is to ascertain the relationship between wealth inequality and entrepreneurial activity in South Africa. Establish the nature of this relationship for individuals at the top of the wealth distribution (wealthy individuals) in contrast to those at the bottom (poor individuals) of the wealth distribution.

A quantitative research design is used and a fixed effect model was estimated to test this studies hypotheses. A balanced sample from the National Income Dynamics Study (NIDS) survey was used and it covers all individuals in the geographic location of South Africa.

This study finds evidence suggesting that amidst low levels of entrepreneurial activity, at an aggregate level, there is a positive relationship between wealth inequality and entrepreneurial activity in South Africa. It also finds evidence that suggests that this relationship is not significant across the entire wealth distribution, and in particular, it is not significant for the top end of the distribution (wealthy individuals). The relationship between casual labour and wealth inequality is also significant and positive at an aggregate level. Wealth inequality is high but the rate of entrepreneurial activity is still low by international standards. This means that a wider range of interventions need to put in place to improve entrepreneurial propensity in this country.

This study has contributed to literature by bridging the gap between development economics and entrepreneurship by investigating the association between dimensions in both disciplines instead of one or the other in isolation. Furthermore it provided evidence to establish the type of relationship that exists between wealth inequality and entrepreneurial activity in South Africa.

Key words: wealth inequality, entrepreneurial activity, Gini index, casual labour, institutions.

DECLARATION

I, Nombulelo Sibanda, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the Field of Entrepreneurship at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Nombulelo Sibanda

Signed at Parktown

On the 4th day of June 2019.

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I would like to thank my supervisor Professor Boris Urban who consistently provided timely guidance and feedback enabling me to navigate the writing process. Professor Urban consistently steered me in the right the direction whenever it was necessary with his insightful comments on this research report. I would also like to thank the organisation SALDRU for their work in conducting the National Income Dynamics Study, which has provided the data that was used in this study.

I am grateful to my friends and family especially my mother Matilda, who has been a constant source of strength, nutrition and encouragement throughout this process. I am incredibly grateful for your unwavering support in anything that I pursue.

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1. CHAPTER 1: INTRODUCTION

South Africa has one of the highest and most persistent inequality rates by any measure; inequality has been increasing since the end of apartheid in 1994 (The World Bank, 2018). Most studies on income inequality in South Africa indicate that it is extremely high by international standards (Finn & Leibbrandt, 2013). Evidence from the Living Conditions Survey 2014/2015 shows that the country had the highest Gini coefficient in the world at 0.63 (The World Bank, 2018). Inequality in income, wealth, consumption and opportunity may have many adverse effects on an economy and society; when inequality is too high, it exacerbates socioeconomic conditions, for example, crime, infant mortality and the lack of opportunity for social mobility (Stiglitz, 2012; Wilkinson & Pickett, 2009, cited by Xavier-Oliveira, Laplume, & Pathak, 2015). South Africa's current development policies, including the National Development Plan (NDP), are strongly aimed at reducing inequality (National Planning Commission, 2012).

There have been various findings in literature regarding the way in which inequality and entrepreneurship relate. There are mixed views on the relationship between inequality and entrepreneurship. Lippmann, Davis, and Aldrich (2005) suggest that nations with high levels of economic inequality typically have high rates of entrepreneurial activity. Xavier-Oliveira et al. (2015) find evidence that confirms that as inequality increases, both necessity and opportunity-based entrepreneurship increase. It follows that a country like South Africa, that is characterised by high levels of inequality, is likely to have high levels of entrepreneurial activity, however, this is not the case. More recently, Ragoubi and El Harbi (2018) conducted an empirical study that suggests that there is an inverted U-shaped relationship between income inequality and entrepreneurship; when income inequality increases, entrepreneurship increases, reaching a maximum, and then decreases. This implies that there is an optimum level of income inequality where entrepreneurial activity is at a maximum. When this threshold is surpassed, income inequality undermines venture creation due to the fact that it increases socio-economic tensions that have an adverse effect on the business environment (Ragoubi & El Harbi, 2018). Political responses to high inequality, such as redistributive policies, may lead to a reduction in the incentives to invest which has an adverse effect on investment, business and

economic growth (Persson & Tabellini, 1994, cited by Bigsten, 2016). These views suggest that there may be a feedback loop between wealth inequality and entrepreneurship.

Sarkar, Rufín, and Haughton (2018) suggest that there are thresholds to entrepreneurial activity, namely, self-employment and being an employer. The authors argue that greater inequality leaves those at the lower end of the unequal distribution unable to make the transition to self-employment. Furthermore, the authors suggest that for those individuals who are unable to make the transition to self-employment due to greater inequality, casual labouring is the occupation of necessity (Sarkar et al., 2018).

The aim in this research is to ascertain the nature and extent of the relationship between wealth inequality and entrepreneurial activity in the South African context. The interest is in the possibility that wealth inequality affects the likelihood of an individual becoming an entrepreneur. Therefore, the topic of this research is wealth inequality and entrepreneurial activity in South Africa: Evidence from the National Incomes dynamics study.

1.1 Context of the research study

An important question in the study of entrepreneurship is establishing enabling and prohibitive factors that explain why some individuals become entrepreneurs while others do not (Sarkar et al., 2018). The decision to engage in entrepreneurship is likely to be shaped by prevailing socio-economic conditions that are characterised by various contextual factors that may shield or encourage entrepreneurial actions, motivations and intentions by people in a specific country (Xavier-Oliveira et al., 2015). There is a gap in academic literature between development economics and entrepreneurship. In entrepreneurship literature, there is consensus that the prevalence or lack thereof of entrepreneurship activities in a region or a country is a function of societal institutions (Chang 2007, cited by Naude, 2010); including development institutions that govern aspects of society, such as rule of law, property rights, good governance and macroeconomic policy (Naude, 2010).

Bapuji and Riaz (2013) suggest that more empirical studies that address the associations between economic inequality and management, rather than concentrating on one or the other in isolation, are necessary (Lecuna, 2014). This paper contributes to the call for empirical work bridging this divide.

There is currently little empirical research exploring the interaction of wealth inequality, in particular, and entrepreneurship. South Africa is one of the most unequal countries in relation to net wealth distribution; the top 10 percent of households in the distribution of household wealth hold 71 percent of net wealth, while the bottom 60 percent hold only 7 percent. Wealth inequality is much larger than income inequality in this country (The World Bank, 2018).

This study is rooted in the entrepreneurial domain as it aims to ascertain the nature of entrepreneurial activity in the South African context; in addition to this, it has theoretical roots in economics and finance in its measurement of wealth. In public dialogue, it is generally accepted that entrepreneurial activity has positive connotations while inequality has negative connotations (Michie, 2018). In South Africa, public policy is aimed at increasing entrepreneurship while decreasing inequality. This may not be consistent, given that some studies find that inequality is associated with an increase entrepreneurial activity, since inequality entails that the wealthy will have the resources to invest in entrepreneurial activities, while at the same time, inequality may prohibit poorer individuals from engaging in entrepreneurship (Michie, 2018). In the context of South Africa, which is a country plagued by high inequality, poverty, high unemployment, among other socio-economic challenges, it is important that policy takes into account the variety of possible intended and unintended consequences of supporting the reduction of inequality. Additionally, it is important that policy delivers the intended outcome of reducing inequality while increasing entrepreneurial activity that does not require or create inequality (Michie, 2018).

1.2 Contribution of the Study

This study contributes to literature by firstly bridging the gap between development economics and entrepreneurship by investigating the association between dimensions in both disciplines instead of one or the other in isolation. Secondly, this study contributes to empirical data in a developing country context (which is currently limited) on the relationship between inequality and entrepreneurial activity. South Africa is a particularly interesting case study, given its excessive level of inequality and unexpectedly low level of entrepreneurial activity. Thirdly, in the investigation of inequality and entrepreneurship, there are no other studies (to the best of our knowledge) that have utilised wealth data, given how difficult it is to measure wealth, due to its sensitivity. This study is able to do this owing to the wealth data available in the National Incomes Dynamics Study. This is valuable due to the fact that for the purposes of the relationship between economic inequality and entrepreneurship, wealth inequality is likely to have more relevance than income inequality. When considering the necessity of financial resources for an individual to become an entrepreneur, an individual is more likely to rely on wealth (real and financial assets) than income (Lippmann, Davis, & Aldrich, 2005). Lastly, it is established in literature that there is a significant relationship between inequality and entrepreneurial activity, although there is a lack of consensus on whether it is always positive, negative, or an inverted u-shape relationship and under what circumstances it is so. The hypotheses in this study attempt to establish the relationship between wealth inequality and entrepreneurial activity in South Africa. This study aims to shed light on why it is the case that South Africa is characterised by high inequality and low entrepreneurial activity in a climate of high unemployment and high entrepreneurial intention, owing to the relationship between wealth inequality and entrepreneurial activity.

1.3 Problem Statement

1.3.1 Main problem

Ascertain the relationship between wealth inequality and entrepreneurial activity in South Africa. Establish the nature of this relationship for individuals at the top of the wealth distribution (wealthy individuals) in contrast to those at the bottom (poor

individuals) of the wealth distribution.

1.3.2 Sub-problems

Sub-problem 1: Ascertain the aggregate relationship between wealth inequality and entrepreneurial activity in South Africa.

Sub-problem 2: Examine the relationship between wealth inequality and entrepreneurial activity for individuals at the top of the wealth distribution.

Sub-problem 3: Examine the relationship between wealth inequality and entrepreneurial activity for individuals at the bottom of the wealth distribution.

Sub-problem 4: Examine the relationship between wealth inequality and casual labouring as an alternative to entrepreneurial activity for those at the bottom of the wealth distribution.

1.4 Research questions addressed in this research study

Main research question: What is the aggregate relationship between wealth inequality and entrepreneurial activity in South Africa and how does wealth inequality associate with entrepreneurial activities for individuals at the top in contrast to individuals at the bottom of the wealth distribution in South Africa?

Sub-question 1: What is the aggregate relationship between wealth inequality and entrepreneurial activity in South Africa?

Sub-question 2: What is the relationship between wealth inequality and entrepreneurial activity for individuals at the top of the wealth distribution?

Sub-question 3: What is the relationship between wealth inequality and entrepreneurial activity for individuals at the bottom of the wealth distribution?

Sub-question 4: What is the relationship between wealth inequality and casual labouring as an alternative to entrepreneurial activity for those at the bottom of the wealth distribution?

1.5 Significance of the Study

The findings in this empirical study could have a number of development policy implications; by understanding the relationship between wealth inequality and entrepreneurship, this could help to make data driven recommendations that assist to amend policy and ensure that policy is appropriate in order to achieve the goal of inclusive growth and development. This study may also bring more understanding to the data on entrepreneurship and inequality in South Africa. Furthermore, it contributes to literature by formally investigating the relationship between entrepreneurship and economic inequality in a developing country, as such formal investigation is currently limited (Lecuna, 2014).

1.6 Delimitations of the Study

- The empirical analysis in this study was conducted using secondary data in the form of the National Income Dynamics Study (NIDS), conducted by the Southern Africa Labour and Development Research Unit (SALDRU). This data is freely available to the public.
- The research study focused on the prevalence of entrepreneurial activity at different levels of wealth inequality

1.7 Definition of Terms

1.7.1 Entrepreneurship

In this study, the GEM definition of entrepreneurship is used; GEM defines entrepreneurship as "Any attempt at new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business, by an individual, a team of individuals, or an established business" (Global Entrepreneurship Monitor, 2018, p. 1149).

1.7.2 Entrepreneurial activity

This research study borrows from Sarkar et al. (2018) and uses self-employment and employment as proxies for entrepreneurial activity. These authors posit that there are thresholds in entrepreneurial activity. The lower threshold is to become self-employed and the higher one is to become an employer. These thresholds exist because it is

difficult for an individual to ascertain the combination of resources and personal attributes to become self-employed and even more so, to become an employer.

1.7.3 Inequality

Inequality is related to the distribution of valuable resources in society. Inequality may be measured across many different dimensions such as income inequality, wage inequality, wealth inequality, consumption inequality, landholding inequality and inequality of opportunity. Economic inequality is a measure of how unevenly national wealth (stock) and income (flow) are allocated among citizens (Xavier-Oliveira, Laplume, & Pathak, 2015, p.1185).

1.7.4 Wealth

Wealth is a stock variable and can be defined as the accumulation of assets that are marketable either through savings or the preservation of intergenerational transfers. (Trotman-Dickenson, 1983).

2. CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of the literature and empirical studies on inequality and entrepreneurial activity. It outlines the importance of wealth in entrepreneurial propensity, hypotheses are then developed on the relationship between wealth inequality and entrepreneurial activity (self-employment and employer) and casual labouring in South Africa.

2.2 Entrepreneurial Propensity

Contextual factors are important for individual action and structuration theory endeavours to conceptualise the interdependence between an agent and social structure. An agent, in this context, refers to an individual who inhibits the ability to engage with their environment with intentional action; the social structure refers to the group of "rules and resources" that make up the socio-economic context. (Sarason et al., 2006, cited by Griffin-EL & Olabisi, 2018). This theory conceptualises how agents/individuals influence these social systems in the structure and how these systems enable and constrain the agents at the same time (Giddens, 1984, 1991, cited by Griffin-EL & Olabisi, 2018). Entrepreneurship literature has applied structuration theory to the business formation process, the entrepreneur is embedded in the structure, engages with it and pursues opportunity within the constraints it presents (Griffin-EL & Olabisi, 2018).

An important question in the study of entrepreneurship is establishing enabling and prohibiting factors that explain why some individuals become entrepreneurs while others do not (Sarkar et al., 2018). The decision to engage in entrepreneurship is likely to be shaped by prevailing socio-economic conditions that are characterised by various contextual factors that may shield or encourage entrepreneurial actions, motivations and intentions by people in a specific country (Xavier-Oliveira et al., 2015).

There is a significant amount of literature that attempts to clarify why it is more probable that some individuals become entrepreneurs than others (Lofstrom, Bates, & Parker, 2014); the various conditions that enable or restrict new venture creation

have been an attractive area of research for scholars, given the view that entrepreneurship may promote economic growth, enhance production and deepen market competition (Audretsch et al., 2006; Foster et al., 2008, cited by Lofstrom, Bates, & Parker, 2014). The evidence is mostly derived from econometric models of discrete occupational choice, where self-employment or business ownership is identified with the entrepreneurial occupation (Lofstrom, Bates, & Parker, 2014).

In an ideal world, an individual would consider the benefits from starting a new venture (deriving income from the output of the business) against the available returns from the labour market and select the occupation with higher personal benefit (Bradley, McMullen, Artz, & Simiyu, 2012). The above scenario does not consider external constraints that an individual may face, particularly in the context of a developing economy. Constraints are always a factor, even in developed nations (Blanchflower & Oswald, 1998, cited by Bradley, McMullen, Artz, & Simiyu, 2012). The decision to start a business is influenced by the prevailing environment and the capital available (human, social, financial).

In extent entrepreneurship literature, the significance of capital to new businesses is well established (Ho & Wong, 2007). Not only is capital crucial to the establishment of new ventures, but it is important for their survival and success. Empirical work on new firms demonstrates the sufficiency and extent of initial capital resources in improving the ability of new ventures to survive (Kauermann et al., 2005, cited by Ho & Wong, 2007).

Ho and Wong (2007) find evidence that corroborates the significance of financial generosity. They study the importance of three forms of finance, namely, availability of debt finance, informal investors, and venture capital. However, their results show that only informal investment availability contributes significantly to entrepreneurial propensity, and it is especially important as a determining factor of High-Growth Potential and Opportunity entrepreneurship. The likelihood of people entering entrepreneurship is found to increase with their wealth and the magnitude of the assets that they control (Evans & Leighton, 1989, cited by Ho &Wong, 2007).

2.2.1 Entrepreneurial Propensity and wealth

It has been suggested that those individuals who become entrepreneurs have greater net worth than those who do not (Shane, 2003, cited by Lofstrom, Bates, & Parker, 2014). Van Auken (1999) established that financial constraints were the most significant obstacle in launching a new venture (Ho & Wong, 2007). Financial resources enable entry by facilitating time to identify and develop products or services and to find a favourable position in the market (Bradley, McMullen, Artz, & Simiyu, 2012). Financial capital assists as a direct source of equity for a new venture and it can serve as collateral when debt capital is required (Lofstrom, Bates, & Parker, 2014). Empirically, surveys of individuals corroborate the theory that liquidity constraints limit the entrepreneurial choice behaviour of individuals who may desire to switch to self-employment (Bates, 1995). Consequently, the poor are believed to be left out of some forms of entrepreneurship, not because they have failed to recognise profit potential, but because they lack the capital to exploit those opportunities (Aghion et al., 1999; Fishman & Simhon, 2002; Patrick, 1966; Tzannatos, 1999, cited by Bradley, McMullen, Artz, & Simiyu, 2012).

Hurst and Lusardi (2004) challenge the above findings and insist that there is no causality between household wealth and business formation and that previous studies are riddled with endogeneity bias. They posit that observed positive correlations are in fact due to reverse causality and suggest that instead, non-monetary benefits of entrepreneurship make entrepreneurship the occupation of choice for wealthy individuals (Lofstrom, Bates, & Parker, 2014). However, more recent research using IV estimation casts doubt on the Hurst–Lusardi results, finding strong positive relationships between wealth and entrepreneurial entry (Disney & Hathergood, 2009; Fairlie & Krashinsky, 2012, cited by Lofstrom, Bates, & Parker, 2014). The lack of consensus on the relationship still remains.

It has been suggested that the importance of wealth in new business formation is dependent on the type of target industry the entrepreneur is attempting to enter; Some industries have higher barriers than others, for example, entry into capital-intensive industries that are characterised by expensive and complex processes may often be possible only for individuals with abundant financial resources (Lofstrom, Bates, & Parker, 2014). Intuitively, empirical evidence indicates that wealth endowments

positively predict entry into high-barrier industries, wealth acts to lessen capital constraints and enables acquisition of important resources. On the other hand, wealth does not appear to influence the probability of entry into low-barrier sectors where few financial resources are required (Lofstrom, Bates, & Parker, 2014).

Now that the significance of wealth in new business formation has been established, it follows that for there to be societal impact of this relationship, there needs to be individuals who are relatively wealthier than others in order for their resources to aid business formation. This means that there needs to be some level of inequality in a society. The following section outlines inequality in more detail.

2.3 Conceptualising wealth inequality

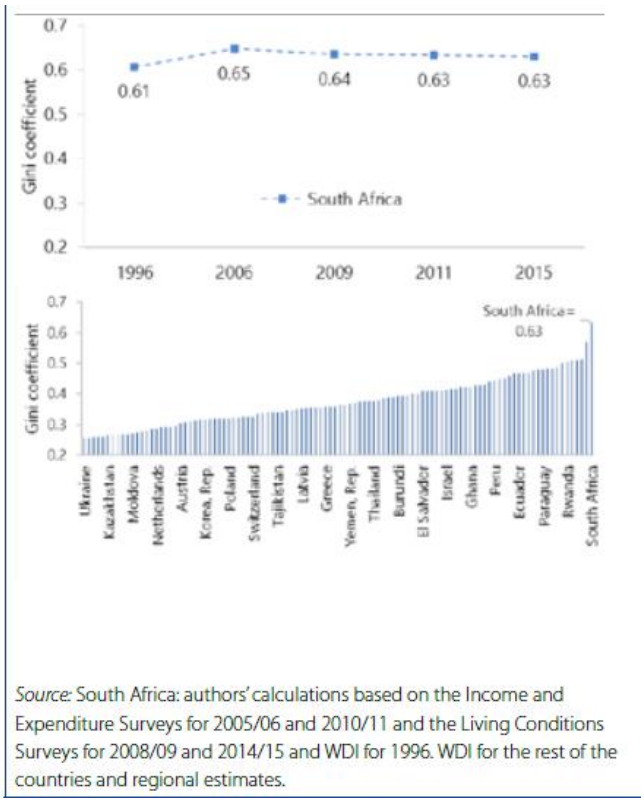
2.3.1 Inequality

Inequality is related to the distribution of valuable resources in society. Since commencement of the discipline, sociology has been concerned with inequalities, such as access to power and different resources (Lippmann, Davis, & Aldrich, 2005).

Inequality may be measured across many different dimensions such as income inequality, wage inequality, wealth inequality, consumption inequality, landholding inequality and inequality of opportunity. Economic inequality is a measure of how unevenly national wealth (stock) and income (flow) are allocated among citizens (Xavier-Oliveira, Laplume, & Pathak, 2015, p.1185).

The Kuznet's curve is a theory of inequality in economic development that has dominated the discipline of economics since the second half of the 20th century (Kuznets, 1955, p.1963 cited by Xavier-Oliveira, Laplume, & Pathak, 2015). The theory argues that inequality has a tendency to be low in economies that have not reached industrialisation due to a prevalence of unproductive work, thereafter inequality reaches a high during the early stages of industrialisation as more productive work becomes prevalent and then reduces again as a country gets richer and wealth becomes redistributed through social transfers and taxes (Milanovic, 2011, cited by Xavier-Oliveira, Laplume, & Pathak, 2015).

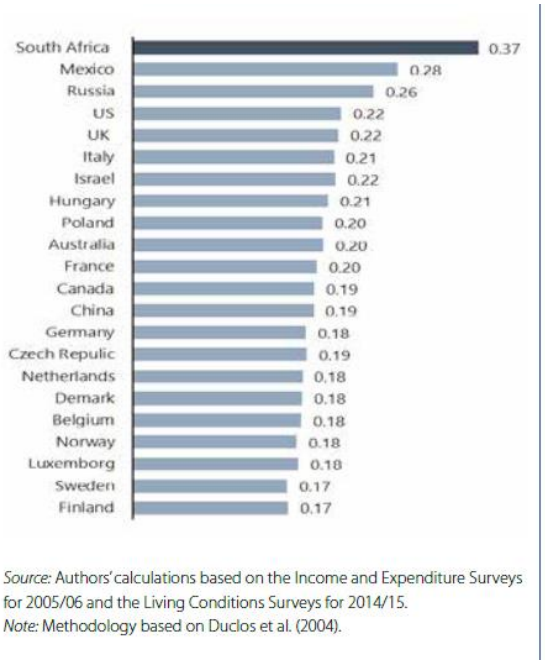
Most studies on income inequality in South Africa indicate that it is extremely high by international standards (Finn & Leibbrandt, 2013). Evidence from the Living Conditions Survey 2014/2015 shows that the country had the highest Gini-coefficient in the world at 0.63 (The World Bank, 2018). Other dimensions of inequality in South Africa are also high by international standards as seen in Figures 1, 2 and 3 which illustrate long-term trends in inequality, levels of polarisation and inequality of opportunity respectively, for South Africa in comparison to other countries.



Source: South Africa: authors' calculations based on the Income and Expenditure Surveys for 2005/06 and 2010/11 and the Living Conditions Surveys for 2008/09 and 2014/15 and WDI for 1996. WDI for the rest of the countries and regional estimates.

Figure 1: Long-term trends in inequality, comparison to other countries

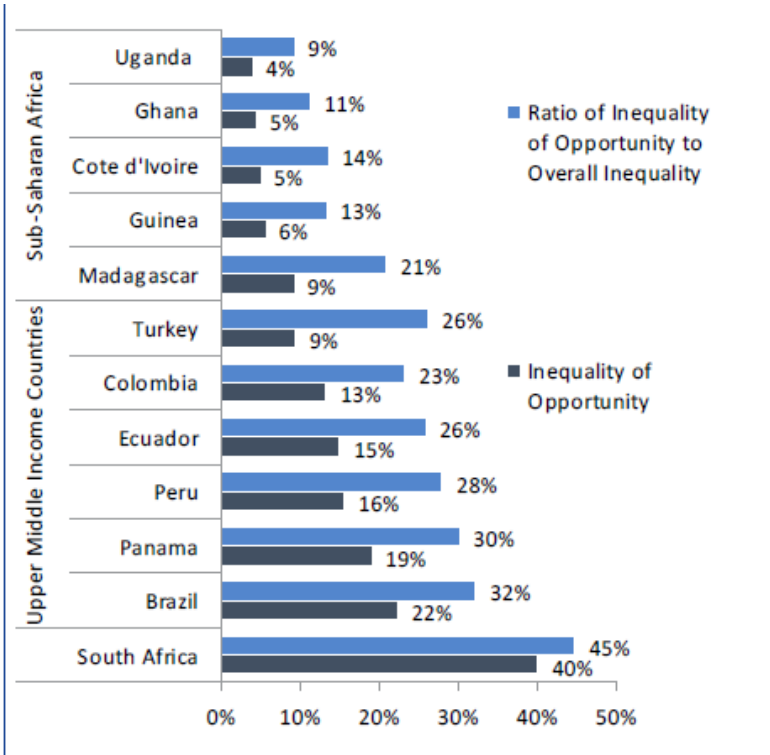
Source: (The World Bank, 2018, p.43)



Source: Authors' calculations based on the Income and Expenditure Surveys for 2005/06 and the Living Conditions Surveys for 2014/15.
Note: Methodology based on Duclos et al. (2004).

Figure 2: Polarization indexes across countries

Source: (The World Bank, 2018, p.43)



Source: Brunori et al. (2013); for South Africa, estimates from NIDS 2008–2014/15.

Figure 3: Inequality of opportunity

Source: (The World Bank, 2018, p. 46)

An increasing body of research in entrepreneurship has emphasised the potential limiting function of inequality in the entrepreneurial process (Patel, Doh, & Bagchi, 2018).

The majority of studies on economic inequality centre income but wealth and income are not highly correlated. Empirically, wealth inequality is found to be more pronounced than income inequality, previously severe data limitations in measuring wealth have held back attempts to clarify the relationship between wealth and entrepreneurship (Lippmann, Davis, & Aldrich, 2005).

2.3.2 Wealth inequality

Wealth is a stock variable and can be defined as the accumulation of assets that are marketable either through savings or the preservation of intergenerational transfers. (Trotman-Dickenson, 1983). This study utilises net worth in the empirical analysis of wealth distributions, individual net worth is defined as the difference between gross wealth and gross liabilities of an individual (Cowell & Van Kerm, 2015).

In South Africa, wealth inequality is high and has been on an upward trend; wealth inequality is higher than consumption inequality and wealth is an important factor in long-run inequality (The World Bank, 2018). Literature shows that wealth inequality is persistently higher than income inequality (Mbewe & Woolard, 2016). For the purposes of the relationship between economic inequality and entrepreneurship, wealth inequality is likely to have more relevance than income inequality. When considering the necessity of financial resources for an individual to become an entrepreneur, an individual is more likely to rely on wealth (real and financial assets) than income (Lippmann, Davis, & Aldrich, 2005).

Furthermore, wealthier individuals have previously played the role of primary investors in emerging technologies and radical innovations; they also tend to be the early adopters of novel technologies, enabling the technologies to develop and their prices to drop so that they are accessible to a larger market in the long-run. Recently, however, technologies have enabled the investment of less wealthy individuals,

however it would not have been possible to reach this state without previous investments of those individuals who have significant wealth holdings (Packard & Bylund, 2017).

From a research point of view, the emergence of wealth data is enabling more empirical analysis on wealth inequality. Wealth is particularly difficult to measure due to its social sensitivity and the challenges associated with attaining accurate estimates of the market value of different asset types (financial or physical) (Brophy, Branson, Daniels, Leibbrandt, Mlatsheni, &Woolard, 2018). However, the emergence of wealth data is enabling more empirical analysis on wealth inequality.

2.4 Wealth inequality and entrepreneurial activity

Entrepreneurial activities are as a result of motivational and cognitive factors that influence an individual's decision to become an entrepreneur. Individuals are motivated to take part in entrepreneurial endeavours based mainly on necessity or opportunity (Lippmann et al., 2005). People may engage in entrepreneurship due to "push factors" owing to the need for survival, for example, or "pull factors" such as the desire to pursue an identified business opportunity to satisfy their individual need for achievement (Xavier-Oliveira et al., 2015). Extant literature contends that necessity and opportunity motivated entrepreneurship have differing outcomes and impact on an economy; opportunity entrepreneurship is likely to have a larger potential to drive productivity and contribute to the technological shocks that drive economic growth, while necessity entrepreneurship is expected to be more redistributive (Xavier-Oliveira et al., 2015).

GEM defines entrepreneurship by type of motivation as shown below:

- ***Opportunity Entrepreneurship*:** Involvement in new venture creation motivated by a desire to take advantage of a business opportunity.
- ***Necessity Entrepreneurship:*** Involvement in new venture creation motivated by a lack of better choices for work (Global Entrepreneurship Monitor, 2018, p. 1149)

Macroeconomic factors also have an influence on whether individuals participate in necessity or opportunity entrepreneurship. A country with labour markets that exhibit better opportunities and has strong social grants is less likely to have individuals who engage in necessity entrepreneurship, alternatively entrepreneurs in such countries mostly start businesses to exploit market opportunities (McMullen et al., 2008, cited by Bradley, McMullen, Artz, & Simiyu, 2012). Opportunity and necessity based entrepreneurship are activities that assure the highest possibility of return at the point of making the decision, however, opportunity-based entrepreneurship is not an involuntary decision that is shoved onto the entrepreneur (Bradley, McMullen, Artz, & Simiyu, 2012).

2.4.1 Empirical Findings on the relationship between inequality and entrepreneurial activity

There have been various studies that have empirically investigated the relationship between inequality and entrepreneurship. Through these investigations, it is somewhat established that a significant relationship exists, although there is tension on the type (positive, negative or quadratic) of relationship. A summary of the empirical studies and their findings is found in Table 1.

Table 1: Summary of empirical studies on relationship between Inequality and Entrepreneurship

Study	Independent variable	Dependent variable	Finding
Lecuna (2014)	Income inequality	Entry Density & Total Early Stage Entrepreneurial Activity (TEA)	There is a positive linear relationship between income inequality and entrepreneurial activity
Xavier-Oliveira et al. (2015)	Income inequality	Necessity & Opportunity based entrepreneurship	Income inequality leads to an increase in both necessity and opportunity-based entrepreneurship
Sarkar et al. (2018)	Inequality in landholding; Inequality in	Entrepreneurship (self-employment & being an employer)	1. Distribution of landholdings has no significant effect on

	distribution of educational attainment; inequality in consumption		entrepreneurship patterns in urban areas but has an effect in rural areas in India. 2. There is no relationship between inequality in distribution of educational attainment and the propensity to be an employer 3. The relationship between consumption inequality is mixed. Consumption inequality is associated with being an employer, but it is associated with fewer self-employed.
Ragoubi & El Harbi(2018)	Income inequality	Entrepreneurial Activity	Inverted U-shaped relationship between income inequality and entrepreneurship.
Jung, Seo, & Jung (2018)	Income inequality	Entrepreneurship	Find a negative and direct effect of income inequality on entrepreneurship

Source: Constructed by author based on the literature review

2.4.1.1 Evidence of a positive relationship between inequality and entrepreneurial activity

The potential positive relationship between economic inequality and entrepreneurship is likely due to the fact that the same socio-economic dynamics that increase a country's levels of economic inequality may also result in increased entrepreneurial activity, some authors suggest that inequality can lead to an increase in both necessity and opportunity based entrepreneurial activity (Lippmann et al., 2005). One reason behind the positive relationship is based on the fact that wealth concentration enables individuals on the higher end of an unequal distribution to self-fund entrepreneurial projects, this assists them in overcoming the funding barrier to entrepreneurship (Ragoubi & El Harbi, 2018). On the other hand, individuals on the lower end of the unequal distribution resort to self-employment out of economic necessity; this effect may be expected to be stronger in South Africa given the high unemployment rate (27.7% in the third quarter of 2017) which limits formal labour market participation

opportunities for individuals (The World Bank, 2018). The scarcity of employment alternatives motivates people to survive by the pursuit of entrepreneurial ventures (Block & Wagner, 2010, cited by Xavier-Oliveira et al., 2015).

A study investigating high income inequality as a determining structural factor in entrepreneurial activity was conducted using panel data from 54 countries, for the period 2004-2009. The aim of the study was to examine the suggestion that income inequality affects entrepreneurial activity rates across countries (Lecuna, 2014). The results of this study indicate that there is a positive linear relationship between income inequality and entrepreneurial activity. Uniquely, entrepreneurship was measured in two independent ways in this study; firstly, using "entry density" derived from the World Bank Group Entrepreneurship Snapshot and secondly, using "Total Early Stage Entrepreneurial Activity (TEA)", derived from the Global Entrepreneurship Monitor (GEM). The relationship holds for both measures and results are robust to a varied range of controls including macroeconomic, institutional, and competitiveness variables (Lecuna, 2014).

Data from the Global Entrepreneurship Monitor (GEM) was also used by Xavier-Oliveira at al., (2015) in their empirical study of the influence of economic inequality onto the probability of entry into necessity and opportunity-based entrepreneurship. The authors find evidence that confirms that as inequality increases, both necessity and opportunity-based entrepreneurship increase; this effect is higher for necessity than opportunity-based entrepreneurship. This empirical evidence corroborates the theoretical hypothesis of Lippmann et al. (2005) that inequality leads to an increase in both necessity and opportunity based entrepreneurial activity. South Africa is one of the 31 countries included in their sample and it is worthwhile noting that although South Africa has the highest Gini index in the sample (67.40), only 2.52% (against a sample average of about 4%) of individuals were identified as necessity-based entrepreneurs and 5.18% (against a sample average about of 10%) of individuals were identified as opportuniy-based entrepreneurs. This data for South Africa specifically, indicates that even though South Africa is the most unequal country in the sample, it has a lower than average percentage of individuals engaged in necessity and opportunity based entrepreneurship.

In the graph illustrated in Figure 4, it is evident that the probability of engaging in necessity entrepreneurship increases as inequality increases. It is notable that at all levels of inequality, those with lower incomes are more likely to engage in necessity entrepreneurship.

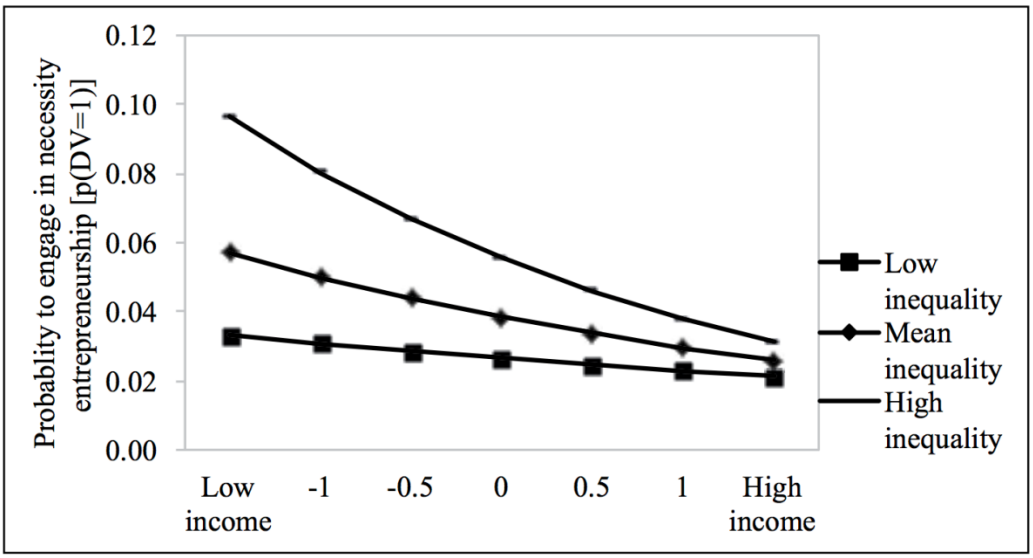


Figure 4: Necessity entry and individual income

Source: Xavier-Oliveira et al. (2015, p.1198)

In the graph illustrated in Figure 5, it is evident that the probability of engaging in opportunity entrepreneurship increases as inequality increases. In contrast with Figure 4, at all levels of inequality, those with higher incomes are more likely to engage in opportunity entrepreneurship.

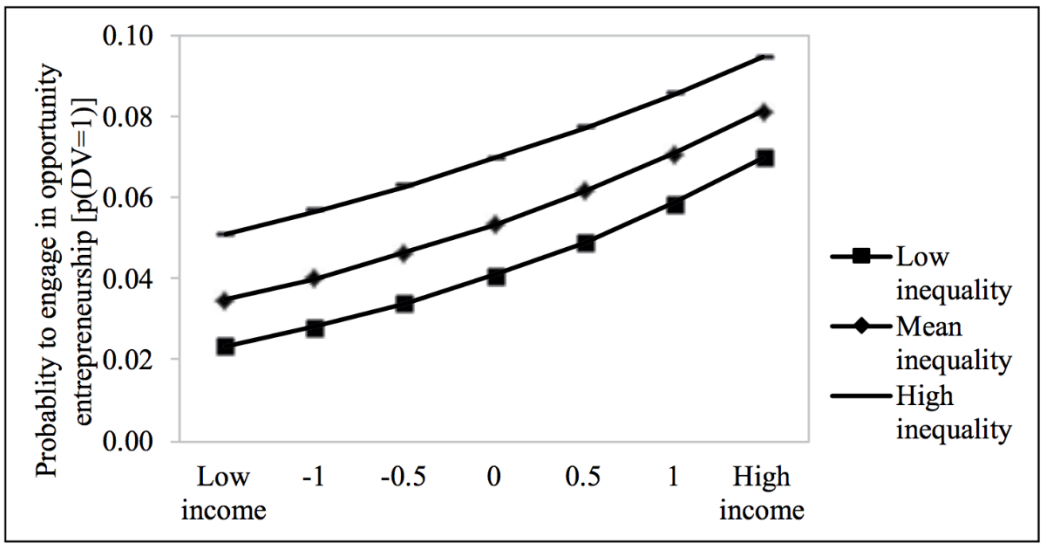


Figure 5: Opportunity entry and individual income

Source: Xavier-Oliveira, Laplume and Pathak (2015, p.1199)

Entry into entrepreneurship and success thereafter can also be investigated from a demand perspective, differences in consumer power impact entrepreneurial propensity. With high consumer wealth inequality, it is more likely that those individuals at the higher end of the wealth distribution will have excess capital to consume products and invest in ventures (Mankiw, Romer, & Weil, 1990, cited by Packard & Bylund, 2017). Additionally, innovation often requires wealth inequality to be effectively introduced and widely adopted. It is often the wealthy early-adopting consumers who stomach the risks and uncertainties of novel products early in the product's life cycle (Forbes, 2000; Hayek, 1978), without them, those products may never diffuse (Rogers, 2003, cited by Packard & Bylund, 2017). Due to the fact that comparatively wealthy individuals have a higher threshold for loss of income earned, they are more willing and able to tolerate the risks of taking on emerging products (Packard & Bylund, 2017). Comparatively wealthier individuals play an imperative role in product development as they assist in the achieving of economies of scale and learning curves; thereafter the subsequent price decline permits broader adoption to take place (Agarwal & Bayus, 2002; Golder & Tellis, 1997, cited by Packard & Bylund, 2017). Packard and Bylund (2017) suggest that without a group of people with higher incomes or wealth, a large number of people would not gain access to emerging technology or products, essentially they propose that wealth inequality may be necessary for increased entrepreneurship.

As previously mentioned in this literature review, wealth can be utilised in entrepreneurial investment. Individuals' amassed capital may be invested toward increased future productivity; this is the essense of entrepreneurship (Bjørnskov & Foss, 2013; cited by Packard & Bylund, 2017). However, when income inequality is eliminated, such accumulation of wealth would be unlikely and income would be utilised for immediate consumption. It follows then that without wealthy venture capitalists, bankers, or angel investors, the rate of entrepreneurship would be curtailed to some extent (Packard & Bylund, 2017).

This brings us to this study's first hypothesis:

2.4.1.1.1 Hypothesis 1

$\boldsymbol{H_1}$: *There is a positive relationship between wealth inequality and entrepreneurial activity for individuals at the top end of the wealth distribution such that as wealth inequality increases, entrepreneurial activity increases for these individuals.*

2.4.1.2 Evidence of a negative relationship between inequality and entrepreneurial activity

An important indicator of entrepreneurial activity, measured by the Global Entrepreneurship Monitor (GEM), is the Total Early-Stage Entrepreneurial Activity (TEA) rate (Global Entrepreneurship Monitor, 2018); it measures the percentage of the adult population that is in the process of starting or who have just started a business (Herrington, Kew, & Mwanga, 2017). South Africa's ranking for TEA rates has been below the median for the GEM sample (2002 to 2016) and is significantly worse in recent years (Herrington, Kew , & Mwanga, 2017). In 2016, South Africa ranked 46th out of 65 countries in terms of TEA rates; this was 13 points below the median (Herrington et al., 2017). This cross-sectional empirical data on early-stage entrepreneurial activity indicates that South Africa is characterised by a low level of early-stage entrepreneurial activity by international standards; at the same time, the country has one of the highest levels of wealth inequality. A South African empirical study using panel data from the nationally representative National Income Dynamics Study (NIDS) found that the Gini Coefficient for wealth (calculated using net worth) was 0.93 in 2015 (Mbewe & Woolard, 2016). This is indication that the distribution of wealth is highly unequal.

One possible explanation of such data proposed by Sarkar et al. (2018), goes beyond entrepreneurial motivations and intentions but considers the resources needed to engage in entrepreneurship; their key proposal is that inequality may alter the ability of individuals to gather enough resources needed to be an entrepreneur. At a simple level an individual can engage in entrepreneurship by becoming self-employed while a larger enterprise will usually entail the hiring of employees; the latter will require

more resources than those required by being self-employed. The authors argue that there are thresholds in entrepreneurial activity, namely, becoming self-employed or an employer. Individuals must gather the combination of resources to make the transition to self-employment and even more so, the more demanding threshold of being an employer. These authors posit that greater inequality leaves those at the lower end of the unequal distribution unable to make the transition to self-employment. The study uses data from a large-scale survey of economic conditions of people in India and finds that greater inequality in the distribution of resources is associated with a lower probability of being self-employed (Sarkar et al., 2018). This study proposes that a similar effect may be observed in South Africa, given the country's low levels of entrepreneurial activities and the levels of poverty in this country. This leads to this studies second hypothesis:

2.4.1.2.1 Hypothesis 2

$\boldsymbol{H_2}$: *There is a negative relationship between wealth inequality and entrepreneurial activity for individuals at the bottom end of the wealth distribution such that as wealth inequality increases, entrepreneurial activity decreases for these individuals.*

2.4.1.3 Evidence of a mixed relationship between inequality and entrepreneurial activity

Income distribution may influence entrepreneurial activity through its effect on innovation. Jung, Seo, and Jung (2018) posit that this can be observed through two contrasting effects, namely, market size and price effects. The market size effect is related to the size of the market demand for new products, in this regard, inequality has a negative effect on entrepreneurial activity due to the fact that some markets may only be limited to affluent people (Bertola, 2000; Foellmi & Zweimüller, 2006; Zweimüller, 2000); especially in societies characterised by high inequality and poverty, such as South Africa. When a potential entrepreneur observes this state, their perceptions of future profits and demand cause them to decide not to exploit new opportunities due to limited market size (Casson & Wadeson, 2007, cited by Jung, Seo, & Jung, 2018). Essentially, the market size effect results in a smaller amount of entrepreneurs.

The price effect refers to the positive effect of inequality on innovation due to the fact that wealthy people are willing to pay for new products; this apparent demand generates incentives for potential entrepreneurs driven by the desire for financial profits. In this regard, under the price effect, inequality increases the number of entrepreneurs (Jung, Seo, & Jung, 2018). The price effect is similar to the demand side consumer power mechanism proposed by Packard and Bylund (2017). Given that the market size and price effect have contrasting impacts on entrepreneurial propensity, it is important to ascertain which of these will be dominant at an aggregate level.

Bertola, Foellmi & Zweimüller (2006) suggest this is dependant on the relative size of the population and relative income of the poor in contrast to the rich (Jung, Seo, & Jung, 2018). They suggest that in a society with a bigger wealthy population, the price effect will be larger, resulting in more entrepreneurs because entrepreneurs are incentivised to chase higher profits. Divergently, societies where the relative wealth of affluent people is smaller, the market size effect dominates because the number of people who can afford new products is small (Jung, Seo, & Jung, 2018). Empirically, Jung, Seo and Jung (2018) find a negative and direct effect of income inequality on entrepreneurship, demonstrating that, for their metropolitan statistical area, the market size effect prevails. Their results demonstrate that at an aggregate level, income inequality negatively affects entrepreneurship (Bertola, 2000; Foellmi & Zweimüller, 2006; Zweimüller, 2000, cited by Jung, Seo, & Jung, 2018).

This illustrates the fact that the relationship between inequality and entrepreneurship may be contrasting for individuals at different levels of the wealth distribution and that different market factors may moderate the relationship in contrasting ways. In the South African context of high wealth inequality but low early-stage entrepreneurial activity, this study proposes that at an aggregate level, it is more likely that a negative relationship will prevail.

Therefore the third Hypothesis is:

2.4.1.3.1 Hypothesis 3

$\boldsymbol{H_3}$: *There is a negative relationship between wealth inequality and entrepreneurial activity (self-employment/employer) such that as wealth inequality increases, entrepreneurial activity decreases in South Africa.*

2.5 Casual Labouring

Another question is to ascertain the extent of casual labouring due to greater inequality. Sarkar et al. (2018) suggest that for some individuals who are unable to make the transition to self-employment, casual labouring is the occupation of necessity (Sarkar et al., 2018). The authors unexpectedly find that in India, greater inequality is associated with less self-employment. This is inconsistent with their reasoning that high inequality would entail a big group of relatively poor people who would be pushed to self-employment by necessity (George et al., 2015, cited by Sarkar et al., 2018). The authors also find that the level of consumption per capita enjoyed by the self-employed in their sample are more than a third higher than those of individuals engaging in casual labour. It seems more plausible then that those who are extremely poor resort to working as casual wage labourers, due to the lack of resources to attain self-employment (Sarkar et al., 2018).

In South Africa, casual work is defined as work that is conducted for less than 24 hours a week (Department of Labour, 2018) and this is a likely alternative to self-employment in the South African context. There is also the possibility that such individuals remain economically inactive and essentially unemployed.

In traditonal development models, there is an observation of labour leaving the traditional (argicultural) sector for better-paying modern sector jobs. Empirically however, in recent decades, most individuals migrating out of African agriculture have not been able to attain employment in well-paid modern sector jobs and have had to settle for casual jobs in the informal sector (Bigsten, 2018).

2.5.1.1.1 Hypothesis 4

$\boldsymbol{H_4}$: *There is a positive relationship between wealth inequality and increased casual labouring in South Africa such that as wealth inequality increases, casual labour increases in South Africa.*

2.6 Conceptual framework

This study conceptualises a framework of the relationships outlined in the literature review, in relation to the effect of wealth inequality on entrepreneurship and its effect on the population.

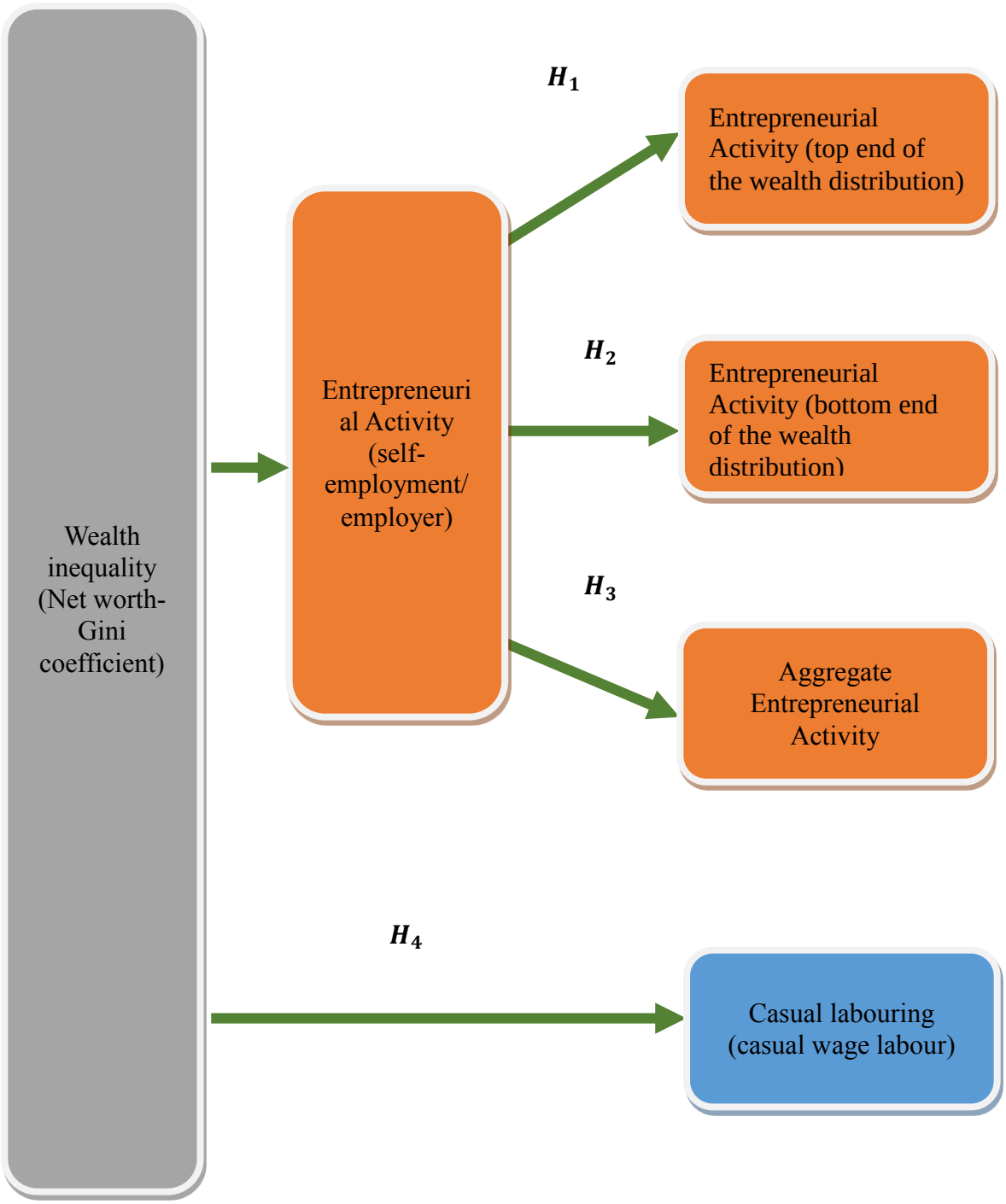


Figure 6: Conceptual framework of how wealth inequality affects entrepreneurial activity and casual labouring

Source: Constructed by author based on the literature review

2.7 Conclusion

This chapter outlined the possible link between wealth inequality and entrepreneurship. Empirical evidence was presented regarding these dimensions in the South African context. The outlining of these dimensions and empirical evidence provided the foundation of the hypotheses are stated above.

The hypotheses formulated are repeated below:

$\boldsymbol{H_1}$: *There is a positive relationship between wealth inequality and entrepreneurial activity for individuals at the top end of the wealth distribution such that as wealth inequality increases, entrepreneurial activity increases for these individuals.*

$\boldsymbol{H_2}$: *There is a negative relationship between wealth inequality and entrepreneurial activity for individuals at the bottom end of the wealth distribution such that as wealth inequality increases, entrepreneurial activity decreases for these individuals.*

$\boldsymbol{H_3}$: *There is a negative relationship between wealth inequality and entrepreneurial activity (self-employment/employer) such that as wealth inequality increases, entrepreneurial activity decreases in South Africa.*

$\boldsymbol{H_4}$: *There is a positive relationship between wealth inequality and increased casual labouring in South Africa such that as wealth inequality increases, casual labour increases in South Africa.*

3. CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research Methodology /Paradigm

The study used a quantitative research method.

3.2 Data Source

The South African National Income Dynamics Study (SA-NIDS) is a nationally representative panel survey of households in South Africa (Leibbrandt et al., 2009). The face-to-face longitudinal survey of individuals living in South Africa is conducted by the Southern Africa Labour and Development Research Unit, University of Cape Town (Brophy, T., Branson, N., Daniels, R.C., Leibbrandt, M., Mlatsheni, C., & Woolard, I., 2018). SA-NIDS utilised a stratified two-stage cluster sample design to randomly select 400 of Statistics South Africa's 3000 primary sampling units (PSUs) for inclusion in the surveys. NIDS was approved by the Ethics Committee as the datasets are publicly available. The SA-NIDS data is recorded in separate data files with one row per observation (individual or household) and the data files are only available in Stata format (Brophy et al., 2018). Since NIDS collects data at individual and household levels there are various data files available however in this study, the Adult dataset is utilised at every interview period (wave). This dataset is characterised by one record per entry from the Adult questionnaire, and each person is assigned a unique identifier: pid (Brophy et al., 2018).

3.3 Research Design

The study was a quantitative research design using panel research approach with secondary survey data. Panel data/longitudinal data consist of time-series data for each member in the dataset (Woolridge, 2009). The National Income Dynamics Study (NIDS) survey aims to collect data on the same individuals in each wave. Based on the literature, this study used appropriate measures for each of the constructs, as described in the literature review.

3.3.1 Independent Variables (IVs)

The independent variables include wealth inequality; the NIDS dataset includes a variable, measuring wealth in which an individual is asked to estimate whether their

net worth is negative, zero or positive. This measure can be problematic due to recall bias which may cause a respondent to incorrectly estimate their net worth (Daniels, Finn, & Musundwa, 2014). The NIDS team creates particular variables from the survey data, these are called derived variables. In this study, an estimated measure of wealth was constructed and used by subtracting total liabilities from total assets for an individual.

In the dataset, individual wealth is calculated and includes net financial wealth, net business equity, net real estate equity, value of vehicles and total value of pension/retirement annuities.

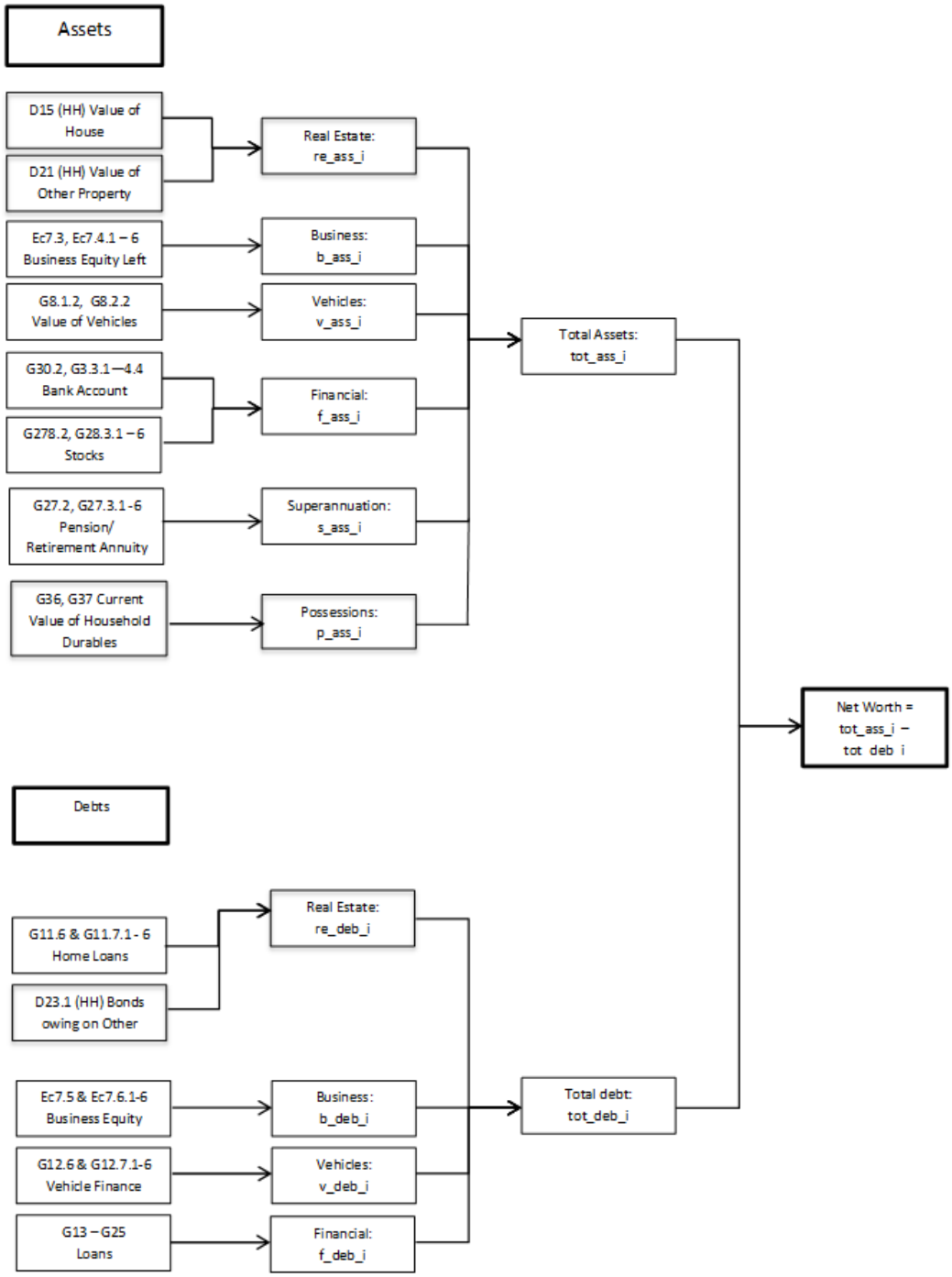


Figure 7: Calculation of Net worth

Source: National Income Dynamics Study (2018, p. 61)

In this study, a Gini coefficient for wealth is constructed; these are used often to measure inequality. Sarkar, Rufín and Haughton (2018) compute Gini-coefficients within local areas in their study of inequality and entrepreneurship; this study borrows from their computation to construct the Gini-coefficient. This coefficient ranges from

0 (perfect equality) to 1 (complete inequality). At the area level, district councils were used as the unit of analysis and this study utilised the district councils specified in the NIDS dataset. South Africa is divided administratively into nine provinces, over 50 district councils, and further into municipalities (National Income Dynamics Study, 2018). The price effect was removed in networth by deflating the networth values using CPI data ; 2010/2011 was used as a base year (Statistics of South Africa, 2017).

3.3.1.1 Control Variables

There are some explanatory variables that were controlled for in our study and they are classified as measures of individual resources and other controls. These are variables that may be relevant in explaining variation in the dependent variable but are not the subject of this study. We included these variables to avoid underspecifying the model and omitted variable bias; not doing so might have led to bias estimators in the model (Woolridge, 2009). In our estimated model, for theoretical purposes, all the control variables were included, however those that vary over time were canceled out in our panel model specification. The control variables we included influence one's propensity to become an entrepreneur and they are sex, race and level of education; sex and race were constant through the period of the study 2010-2017. However, level of education might have changed through the period.

3.3.2 Dependent Variables (DVs)

This study lacked the data on the information that would indicate true entrepreneurship; it utilised the variables "self-employment" or "employer" as proxies for entrepreneurship (Sarkar et al., 2018). Furthermore, the second explanatory variable necessary to test the second hypotheses is casual labouring which is measured in the NIDS dataset. The NIDS data set defines casual labour as "work that is irregular and short-term" or any work that is addition to their first two wage jobs/self-employment businesses (National Income Dynamics Study, 2018, p.16). Indicator variables were coded using the responses in the NIDS study. The dependant variables entrepreneur and casual labour are binary, with 1 indicating that

the indivisual is an entrepreneur or involved in casual labour and 0 indicating that they are not.

3.4 Population and Sample

Data from the National Income Dynamics Study (NIDS) implemented by the Southern African Labour and Development Research Unit (SALDRU) was utilised in this research study. There are currently five waves of the NIDS dataset and they are all available in the public domain (National Income Dynamics Study, 2018). This study was focused on wealth inequality and entrepreneurship but NIDS is not a Wealth and Entrepreneurship Survey, however the survey includes wealth and labour market-participation related questions in some waves. In this study, Wave 2, Wave 4 and Wave 5 data collected between 2010-1011, 2014-2015 and 2017 respectively was used because it encompassed enough data on wealth to construct a measure of wealth. In the NIDS dataset 21 874, 26 804 and 30110 individuals were surveyed in Wave 2, 4 and 5 respectively. There was attrition across the waves, however there were Continuing Sample Members (CSMs) across all the waves; 73% of the people interviewed in the first survey (Wave 1) were successfully interviewed in Wave 5. A number of continuing sample members were added to each wave (Brophy et al, 2018).

3.4.1 Population

The total target population for this research study was all individuals in the geographic location of South Africa. The target population for NIDS was private households in all nine provinces of South Africa and individuals who reside in convents, monasteries and workers hostels. This particular frame excluded individuals residing in other collective living quarters such as old age homes, prisons, military barracks and students' hostels (Leibbrandt, Woolard, & de Villiers, 2009).

3.4.2 Sample and Sampling Method

Sampling involves retrieving representative elements from the target population in order to infer characteristics of the entire population (Cooper & Schindler, 2014). The

sampling frame utilised in the NIDS dataset is a stratified two-stage cluster sample design (Leibbrandt et al., 2009).

This research study utilised Wave 2, Wave 4 and Wave 5 datasets. The focus of this panel study was wealth inequality and it used repeated observations for each respondent, the analysis was restricted to the balanced panel i.e. who were successfully interviewed in all three waves. The analysis should not be interpreted as being nationally representative, which would be the case if each wave was treated as an independent cross-section.

3.5 The Research Instrument

The survey data collected by NIDS was in the form of a questionnaire. The purpose of the research questions was to measure information on the dynamic structure of a sample of household individuals and their changes in expenditures, education, incomes, assets, access to services, health and other dimensions of well-being (National Income Dynamics Study, 2018). This research study utilised only the variables in the NIDS questionnaire needed to test the hypotheses in the study; these included questions related to demographics, wealth, access to services, education and employment (see full research instrument in Appendix 1). Section B contained Demographic questions, Section E contained Labour Market Participation questions, Section H contained Education questions and Section G contained Personal ownership and debt questions.

The datasets for wave 2, 4 and 5 were comparable across all waves. In this study, a balanced sample was achieved, meaning that individuals who were in the final dataset, appeared in each wave and had complete values for all variables.

3.6 Procedure for Data Collection

The secondary data utilised in this study was downloaded from the SA-NIDS website. NIDS utilised fieldworkers who interviewed all households living at selected addresses and they captured responses on the questionnaire sheet (Leibbrandt et al., 2009). In this study, a resident member was an individual who typically resided at the address four nights a week (National Income Dynamics Study, 2018).

3.6.1 Considerations when using NIDS

There are various considerations when using a secondary data sources which are both longitudinal and cross-sectional in nature and are easily available for analysis and provides research opportunities (Thomas & Heck, 2001). SA-NIDS is one such data source; the survey inspects the livelihoods of individuals and households over time, it is a rich data source which covers various themes including changes in poverty, fertility and mortality, household structure and composition, health and education, vulnerability and social capital, economic acticity and labour market participation (Brophy et al., 2018). In an effort to assist researchers and analysts from various disciplines in understanding the data and to provide guidance on how to go about utilising the data, NIDS has published a panel user manual which is easily available on the website (Brophy et al., 2018). The manual is a reference tool for handlers designed to support users of the data to understand the structure of the data files. The manual covers various themes and as such was used in this study to navigate the analysis in order to appropriately investigate the research questions in this study.

NIDS was selected as an appropriate secondary data source in this study because the original survey explores the themes: wealth and labour market participation. In the labour market participation section the questionnaire explores entrepreneurship by examining whether individuals are self-employed and/or employers of others. NIDS collected data at five time periods and to date has a total of five waves, however the wealth section only appears in questionnaires for Waves 2,4 and 5. As a result, this study only uses data from waves 2, 4 and 5 (Brophy et al., 2018).

In the use of the NIDS data as a secondary data source, the panel user manual provided information on various themes as mentioned above. Some of these will outlined in the sections below in so far as they are relevant in this actual study.

3.6.1.1 Number of Observations

In the original study, there are 21874, 26804, 30110 adult observations in waves 2, 4 and 5 respectively. There is high attrition in waves 2 and 4 of White, Indian/Asian and high-income individuals. As a result there was a Top-Up sample added to Wave 5 to increase the number of observations in these groups to ensure representivity. This strategy is successful in ascertaining the correct representivity at a cross-sectional level however statistically this poses a challenge in that the resulting raw sample is likely to be distorted and bias the results in certain statistical analysis (Thomas & Heck, 2001). Given that this study is particularly concerned with wealth as an independent variable and the Top-Up sample added to Wave 5 includes high-income individuals this may result in bias in parameters (Brophy et al., 2018).

This study avoids the challenge created by this Top-Up sample because the analysis in this study is restricted to a balanced sample as outlined above. Furthermore, to ensure clarity and ease of use, NIDS includes two sets of wealth variables, those that are exclude the sample top-up have the suddix "extu" and the manual recommends that these variables are used for panel analysis. This is due to the fact that the variables that have the suffix "extu" exclude the top up sample in the imputation of item non-response. Failure to exclude the top-up sample would result in an increase in the values for those observations on the upper-end of the wealth distribution in Wave 5 when related to wave 2 and 4 (Brophy et al., 2018).

3.6.1.2 NIDS Codebooks

Included in the resources NIDS provides to users are various code books in their program libraries that give examples of Stata codes that can be utilised to manipulate the data (Brophy et al., 2018). A snapshot of the codebook/do file used to impute individual wealth can be seen in appendix C. This study utilised these codebooks provided by NIDS to merge Datafiles between waves as well as codebooks provided

for the imputation of individual wealth variables across all three waves utilised in this study. Fortunately the raw protocols in NIDS are accessible therefore one is able to recode data and this study is not restricted to the particular variables and methods, this provides the study with greater flexibility (McCall & Appelbaum, 1991).

3.6.1.3 Outliers in Components of Net Worth

The NIDS Operations team investigated outliers in the data by using the BACON (blocked adaptive computationally efficient outlier nominators algorithm) (Brophy et al., 2018). Outliers were identified and households were called to verify with the individuals whether the values were accurate. It is likely that outliers in net worth are indicative of the inequality observed in South Africa and since inequality is a variable of concern in this study, outliers are retained in the balanced panel sample.

3.7 Data Analysis and Interpretation

Data were cleaned and analysed using Stata version 14, the choice of software package is because the survey data files are only available in Stata format. Missing responses, "don't know," refusals to answer an item, or items that were not applicable to an individual were coded as missing for all variables. In attempting to create a balanced sample, observations for individuals who were not successfully interviewed in subsequent waves were removed. The attrition was due to various reasons including, refused/not available, moved outside of South Africa or deceased. A screenshot of the final data sample is included in Appendix B.

The analysis began with a description of the distribution of wealth, wealth inequality and entrepreneurship activity in NIDS Wave 2, Wave 4 and Wave 5. It reported on descriptive statistics including measures of central tendency. This gave a sense of the state of wealth, wealth inequality, and entrepreneurship activity. This study then conducted a Three-Period Panel Data Analysis using NIDS Wave 2 (collected 2010-1011), Wave 4 (collected 2014-2015) and Wave 5 (collected 2017).

This study tested the hypotheses using a general fixed effects model. In this study, there are N=7800 individuals and T=3 time periods for each individual. Therefore,

the total number of observations is 3N= 23,400. The fixed effects model that was estimated is structured as follows:

$$\boldsymbol{Y_{i,t} = \delta_1 + \delta_2(d2)_t + \delta_3(d3)_t + \beta_1(Wealth\ inequality)_{it1} + \beta_2(\ level\ of\ education)_{it2} + a_i + u_{it},} \qquad \boldsymbol{t = 1, 2, 3}$$

In terms of notation $Y_{i,t}$, i denotes the individual and t denotes the time period (t =1, for Wave 2 and t =2 for Wave 4 and t=3 for Wave 5). The intercept for t=1 is $\boldsymbol{\delta_1}$, the intercept for t=2 is $\boldsymbol{\delta_1 + \delta_2}$ and the intercept for t=3 is $\boldsymbol{\delta_1 + \delta_2 + \delta_3}$. This allowed the intercept to change over time, indicating that the dependant variables (entrepreneurial activity and casual labouring) can change over time. The variable a_i captured all unobserved, time-constant factors that affect $Y_{i,t}$ (self-employment/employer and casual labouring), this is referred to as the individual fixed effect (Woolridge, 2009). With such a model, each person is used as their own control by evaluating his/her outcome in one wave under a given district-level inequality against against his or her outcome in another wave under a different level of wealth inequality (Adjaye-Gbewonyo, Avendano, Subramanian, & Kawachi, 2016). In the context of this research study, this included variables such as sex, race and innate ability which by definition, should not vary over time for an individual. $Y_{i,t}$ is the self-employed/employer variable and casual labour variables, $(Wealthinequality)_{i,t}$ is the observed wealth inequality for an individual at time t and u_{it} is the time-varying error term.

In this research study, the dependent variable was a binary outcome, β_1 cannot be interpreted as the change in ΔY_i given a one-unit increase in the inequality. This model is a linear probability model (LPM), in this case β_1 measures the change in probability of being an self-employed when inequality changes, ceteris paribus. Predicted probabilities that do not fit in a unit interval are problematic and a "percent correctly predicted" goodness of fit test was conducted (Woolridge, 2009).

3.8 Validity and Reliability

A pre-test on the NIDS questionnaire was conducted and as a result of the feedback, the labour market module was completely redesigned and piloted (Leibbrandt et al., 2009). Given that we were using the secondary data and the primary data was piloted and tested prior to data collection, we are confident of the reliability of the measurement scales.

3.8.1 External Validity and Internal Validity

Internal validity is a challenge and limitation in this research, given that there may have been other confounding variables that were not observed in the survey and were not accounted for in the analysis. In terms of external validity, a similar study was conducted by Sarkar et al. (2018) in India, therefore if our findings are similar, it will give greater external validity to our findings.

3.9 Ethical Considerations

Ethical approval for NIDS was granted by the Ethics Committee of the University of Cape Town. In their application for ethics approval, a draft cover letter, completed faculty application, questionnaires and NIDS documentation was submitted (Leibbrandt et al., 2009). NIDS ensures that the identities of the respondents are protected, the information collected to enable tracking is excluded from the publicly available dataset used in this study. This includes names, addresses, and detailed migration history (Leibbrandt et al., 2009).

4. CHAPTER 4: PRESENTATION OF RESULTS

4.1 Introduction

This chapter begins by presenting and describing the descriptive statistics for the study, including the demographic profile of the study, followed by an outline of the cross-sectional characteristics of wealth and wealth inequality. Thereafter, the results pertaining to the estimated models are presented.

4.2 Descriptive Statistics

4.2.1 Demographic profile of respondents

The graphs below indicate some demographic characteristics of the balanced sample used in this study. In terms of the sex distribution, 59% of the balanced sample is female while 41% is male in this sample. The race distributions indicate that the sample consists of 81% Black African people, 13% coloured people, 2% Indian/Asian people and 5% White people. These demographic characteristics are illustrated in figures 8 and 9 below.

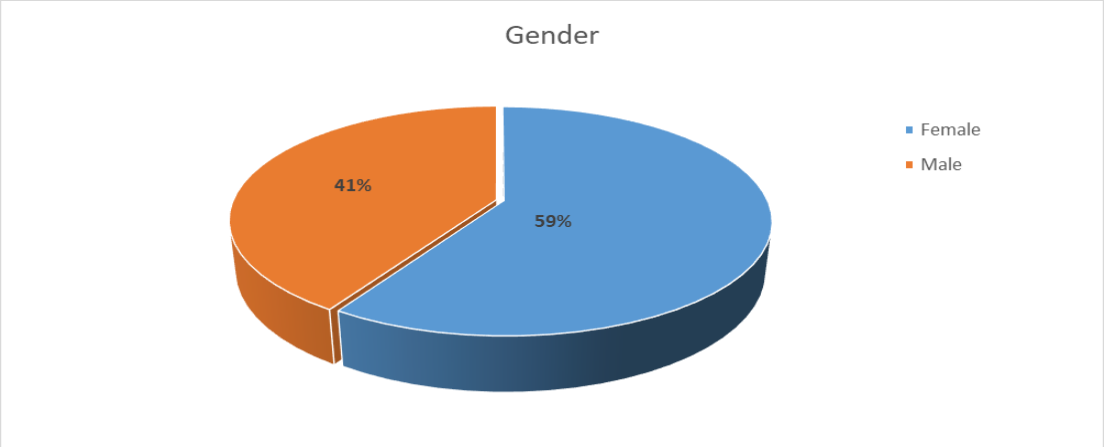


Figure 8: Sex distribution

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

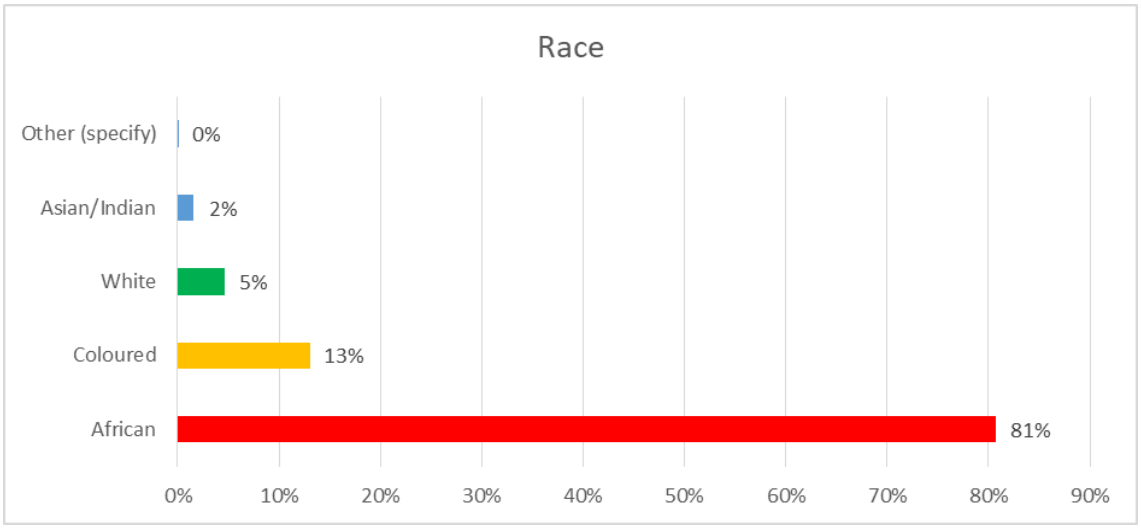


Figure 9: Race distribution

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

Table 2: Sex and Race

	Race						
Gender	African	Asian/I..	Coloured	Missing	Other (..	White	Total
Female	11,230	216	1,782	0	2	585	13,815
Male	7,666	157	1,266	1	2	493	9,585
Total	18,896	373	3,048	1	4	1,078	23,400

Pearson chi2(5) = 13.5377 Pr = 0.019

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

Table 2 above displays the demographics between sex and race. Africans had the highest representation, 18 896, as compared to Asians (373), coloureds (3 048) and whites (1 078). With respect to sex, females dominated across race. African females were 11 230 as compared to African males who were only 7 666, the coloured and whites also followed the same trend.

Table 3: Sex and Dependent Variables

Gender	Self_Employed No	Yes	Total
Female	13,533	282	13,815
Male	9,374	211	9,585
Total	22,907	493	23,400

Pearson chi2(1) = 0.7032 Pr = 0.402

Gender	Casual_Labour No	Yes	Total
Female	13,467	348	13,815
Male	9,386	199	9,585
Total	22,853	547	23,400

Pearson chi2(1) = 4.8610 Pr = 0.027

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

The above contingency table 3 gives a comparison of sex and the two dependent variables that were used in the study which are self-employment and casual labour. Only 282 out of 13 815 females were self-employed whilst 13 533 were not self-employed. The same trend was also witnessed under males where only 211 out of 9 585 were self-employed and the remainder, that is, 9 374 were not self-employed. Pertaining to casual labour, the largest proportion of females were not involved in casual labour (13 647 out of 13 815); only 348 out of 13 815 engage in casual labour. Very few observations in the entire sample are engaged in casual labour (547 out of 23 400). There was a non-significant association between sex and self-employment as the Pearson chi-square probability value was greater than the standard measure 0.05 at 0.402. Sex and casual labour showed a significant association as the corresponding probability value to the Pearson chi-square value was significant (0.027<0.05).

Table 4: Race and Dependent Variables

Race	Self_Employed No	Yes	Total
African	18,492	404	18,896
Asian/Indian	362	11	373
Coloured	3,018	30	3,048
Missing	1	0	1
Other (specify)	4	0	4
White	1,030	48	1,078
Total	22,907	493	23,400

Pearson chi2(5) = 48.8666 Pr = 0.000

Race	Casual_Labour No	Yes	Total
African	18,432	464	18,896
Asian/Indian	359	14	373
Coloured	3,013	35	3,048
Missing	1	0	1
Other (specify)	3	1	4
White	1,045	33	1,078
Total	22,853	547	23,400

Pearson chi2(5) = 34.8057 Pr = 0.000

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

Race was also tabulated against self-employment and casual labour in table 4. The results above showed that most Africans are not self-employed (18 492 out of 18 896) and only 404 out of 18 896 were self-employed. The same trend was observed for Indians, coloureds and whites. The total number of observations who were not self-employed across all races was 22 907 and only 493 out of the 23 400 observations in the sample were self-employed. There was a strong association between race and self-employment as the person chi-squared value was significant at 0.05 (0.000<0.05). Most Africans, Asians/Indians, coloured and whites indicated that they are not engaged in casual labour. Nonetheless, there is a significant association between race and casual labour with a person chi-squared value of 0.000.

Table 5: Year and Dependent Variables

Year	Self_Employed No	Yes	Total
2010/11	7,644	156	7,800
2014/15	7,613	187	7,800
2017	7,650	150	7,800
Total	22,907	493	23,400

Pearson chi2(2) = 4.9025 Pr = 0.086

Year	Casual_Labour No	Yes	Total
2010/11	7,634	166	7,800
2014/15	7,593	207	7,800
2017	7,626	174	7,800
Total	22,853	547	23,400

Pearson chi2(2) = 5.3050 Pr = 0.070

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

Year/Wave was also tabulated against self-employment and casual labour. The results indicate that the levels of self-employment and casual labour were similar across the years/waves. It appears as though the levels peaked in wave 4 and then decreased again in wave 5. However, the associations between the year and casual labour and year and self-employment were non-significant with p-values 0.07 and 0.086 respectively.

4.2.2 Describing Wealth Variables: A Set of Descriptive Statistics

The descriptive statistics gives a general overview of the wealth variable in the study. The major computed descriptive statistics are mean, standard deviation, minimum and maximum. The total number of observations was 23 400. The mean values for total assets and liabilities were R550 000 and R339 000 respectively. The total assets and total liabilities minimum and maximum values were R360 000, R185 000, R879 000 and R571 000 respectively. Vehicle assets had a mean of R118 972 which was greater than all the other assets. Financial liabilities also stood out with a mean of R160 463 which is greater than the other liabilities and also other assets.

Table 6: Wealth data

Variable	Observations	Mean (in thousand rand)	Std. Dev.	Min	Max
Total Assets	23,400	550	56	360	879
Total Liabilities	23,400	339	36	185	571
Business Assets	23,400	79	13	30	181
Real-estate	23,400	78	15	33	230
Vehicle Assets	23,400	119	21	40	234
Financial Assets	23,400	78	13	30	155
Superannuation Assets	23,400	77	13	36	169
Possessions	23,400	120	24	16	241
Real Estate Liabilities	23,400	88	17	35	199
Financial Liabilities	23,400	160	16	46	207
Net worth	23,400	211	55	-21	518

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

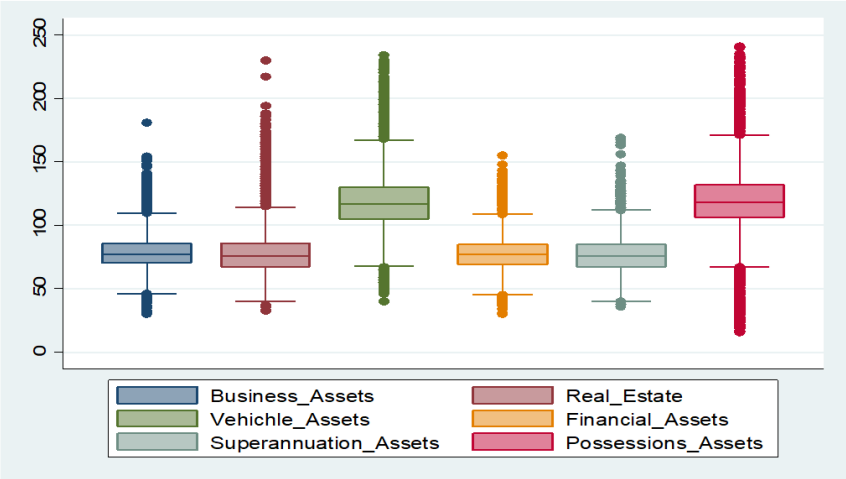


Figure 10: Total Assets

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

Total asset variable is made up of business assets, real estate, vehicle assets, financial assets, superannuation assets and possession assets. The box-plot above displays the distribution of the different kind of assets. As illustrated in the plot, it is apparent that vehicle assets and possession assets are the assets with the highest value for South African citizens, as compared to other assets. Business assets, real estate assets, financial assets and possession assets were observed to be in the same range as their medians showed similar variations.

4.2.3 Describing Wealth Inequality Variables: *A Set of Descriptive Statistics*

This section provides the distribution of wealth in this balanced panel for NIDS Wave 2, Wave 4 and Wave 5. Table 8 illustrates the Gini-Coefficients using networth for all the districts included in the study. Gini-coefficients were computed within local areas in this study of inequality. This coefficient ranges from 0 (perfect equality) to 1 (complete inequality). At the area level, district councils are used as the unit of analysis. It can be noted that the general trend is for inequality to decrease in 2014/2015 and increase again in 2017.

Table 7: District Gini Coefficients for 2010/2011 (Wave 2), 2014/2015 (Wave 4) and 2017 (Wave 5)

District	Gini Coefficient: Year			Average
	2010/11	2014/15	2017	
Alfred Nzo District Municipality	0.80964	0.75065	0.80926	0.78985
Amajuba District Municipality	0.80935	0.75111	0.80930	0.78992
Amatole District Municipality	0.80911	0.75032	0.80970	0.78971
Bohlabela District Municipality	0.80960	0.75148	0.80920	0.79009
Bojanala District Municipality	0.80887	0.74956	0.80895	0.78912
Boland District Municipality	0.80968	0.75004	0.80896	0.78956
Bophirima District Municipality	0.80926	0.75044	0.80879	0.78950
Cacadu District Municipality	0.80918	0.75073	0.80973	0.78988
Capricorn District Municipality	0.80946	0.75090	0.80875	0.78970
Central District Municipality	0.80940	0.74962	0.80915	0.78939
Central Karoo District Municipality	0.80884	0.75185	0.80881	0.78983
Chris Hani District Municipality	0.81018	0.74982	0.80874	0.78958
City Of Cape Town Metropolitan Municipality	0.80937	0.74962	0.80851	0.78917
City Of Johannesburg Metropolitan Municipality	0.80979	0.75004	0.80873	0.78952
City Of Tshwane Metropolitan Municipality	0.81037	0.75078	0.80949	0.79021
Eden District Municipality	0.80846	0.74991	0.80932	0.78923
Ehlanzeni District Municipality	0.80879	0.75083	0.80891	0.78951
Ekurhuleni Metropolitan Municipality	0.80872	0.74996	0.80908	0.78926
EThekwini Municipality	0.80847	0.74940	0.81041	0.78943
Frances Baard District Municipality	0.80886	0.75093	0.80923	0.78967
Govan Mbeki Municipality	0.80930	0.75053	0.80884	0.78956

Ilembe District Municipality	0.80865	0.74992	0.80859	0.78905
Karoo District Municipality	0.80891	0.92100	0.80849	0.84613
Kgalagadi District Municipality	0.80835	0.75053	0.80909	0.78932
Lejweleputswa District Municipality	0.80956	0.75101	0.80962	0.79006
Metsweding District Municipality	0.80848	0.74985	0.80904	0.78912
Mopani District Municipality	0.80928	0.75276	0.80879	0.79028
Motheo District Municipality	0.80908	0.75077	0.80893	0.78960
Namakwa District Municipality	0.80935	0.75182	0.80884	0.79000
Nelson Mandela Metropolitan Municipality	0.80850	0.74924	0.80876	0.78884
Nkangala District Municipality	0.80856	0.74800	0.81001	0.78885
Northern Free State District Municipality	0.80857	0.75029	0.80936	0.78941
O.R.Tambo District Municipality	0.80902	0.75005	0.80903	0.78937
Overberg District Municipality	0.80891	0.74945	0.80852	0.78896
Sedibeng District Municipality	0.80885	0.75090	0.80916	0.78964
Sekhukhune Cross Boundary District Municipality	0.80949	0.75022	0.80830	0.78934
Sisonke District Municipality	0.80842	0.74970	0.80929	0.78914
Siyanda District Municipality	0.80867	0.74961	0.80900	0.78909
Southern District Municipality	0.80866	0.74846	0.80923	0.78878
Thabo Mofutsanyane District Municipality	0.80929	0.75223	0.80976	0.79043
Ugu District Municipality	0.80905	0.74799	0.80897	0.78867
Ukhahlamba District Municipality	0.80878	0.74955	0.80940	0.78924
Umgungundlovu District Municipality	0.80956	0.75193	0.80852	0.79000
Umkhanyakude District Municipality	0.80856	0.75030	0.80903	0.78930
Umzinyathi District Municipality	0.80840	0.74909	0.80901	0.78883

Uthukela District Municipality	0.80851	0.75102	0.80956	0.78970
Uthungulu District Municipality	0.80957	0.75028	0.80849	0.78944
Vhembe District Municipality	0.80893	0.74902	0.80915	0.78903
Waterberg District Municipality	0.80964	0.74983	0.80849	0.78932
West Coast District Municipality	0.80876	0.75077	0.80899	0.78951
West Rand District Municipality	0.80880	0.74902	0.80910	0.78897
Xhariep District Municipality	0.80896	0.74952	0.80939	0.78929
Zululand District Municipality	0.80908	0.74870	0.80931	0.78903

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

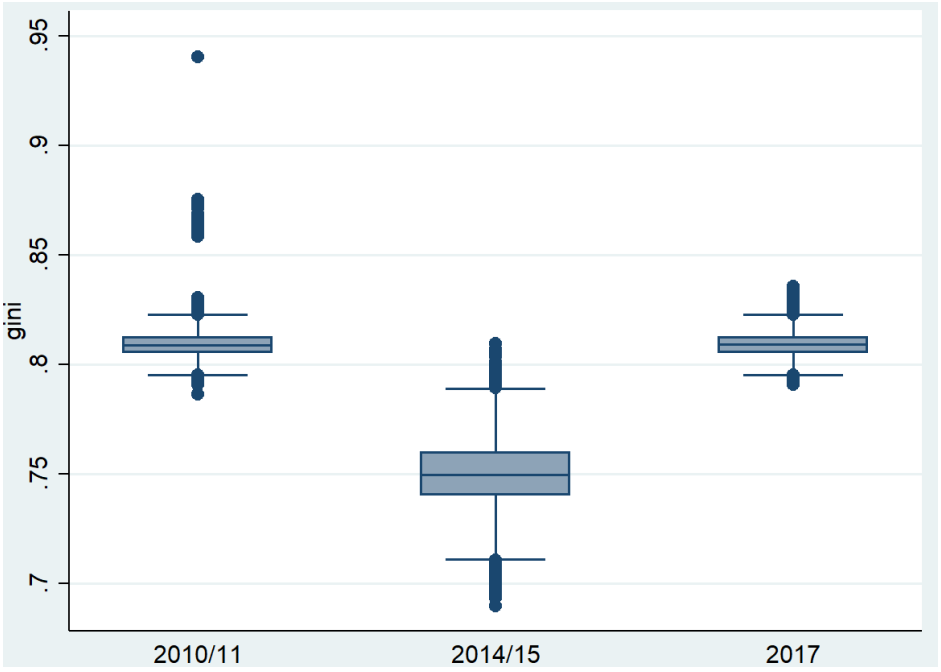


Figure 11: Wealth inequality

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

The box-plot in figure 11 above displays the distribution of the Gini-coefficients for years 2010/2011, 2014/2015 and 2017. The values for the Gini-coefficients are 0.809054, 0.753422 and 0.809077 for years 2010/2011, 2014/2015 and 2017 respectively. As illustrated in the plot, it is apparent that wealth inequality decreased in the year 2014/2015 and increased again in year 2017.

Table 8: Deciles of Net-Worth 2010/2011 and 2014/2015 and 2017.

Deciles	Net-Worth		
	2010/11 (Wave 2)	2014/15 (Wave 3)	2017 (Wave 4)
0-10	-0.0084	-0.0082	-0.0083
10-20	0.0007	0.0009	0.0008
20-30	0.0008	0.0010	0.0009
30-40	0.0010	0.0012	0.0011
40-50	0.0020	0.0022	0.0021
50-60	0.0049	0.0051	0.0050
60-70	0.0111	0.0113	0.0112
70-80	0.0243	0.0245	0.0244
80-90	0.0972	0.0974	0.0973
90-100	0.8734	0.8736	0.8735

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

Deciles sort networth data into ten equal parts: The 10th, 20th, 30th, 40th, 50th, 60th, 70th, 80th, 90th and 100th percentiles. In the above table, net-worth was categorised according to the decile rankings that is from 1-10 to 90-10. The higher the place in the decile rankings, the higher the overall ranking in Net-Worth. The highest rank was the 90-100 decile with 0.8734 in 2010/11, 0.8736 in 2014/15 and 0.8735 in 2017. Clearly, above 85% of net worth are concentrated in the top 10% of the population in all the years. This emphasises the fact that the bottom half of the population own nearly nothing.

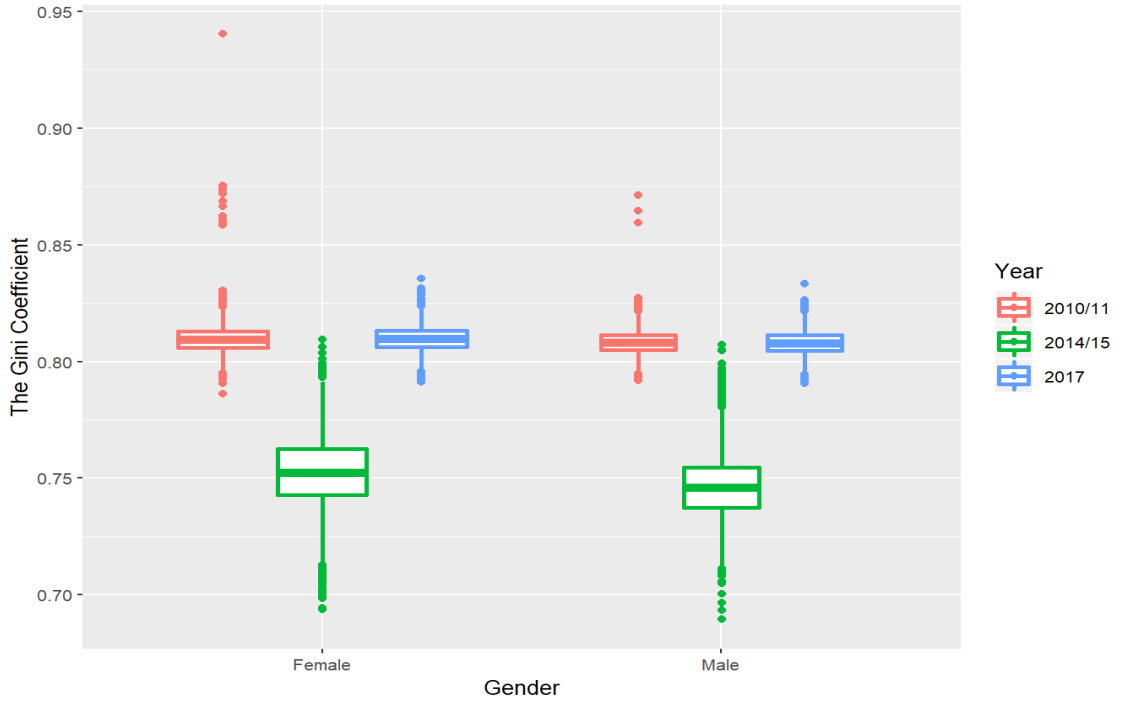


Figure 12: Wealth inequality and Sex

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

The above plot compares the Gini coefficients across sex and year. As a rule of thumb, equal distribution of wealth is only indicated by a Gini coefficient which is approximately equal to zero. There was a slight decrease in wealth inequality in South Africa from 2010 to 2015 across all genders but a slight increase in 2017 as shown in the box-plot in figure 12 above. The highest Gini coefficient was recorded in 2010/2011 which was very close to 0.95 for females. The average Gini coefficient in 2010/11 and 2017 range from 0.80 and 0.85.

Table 9: Test for stationarity

			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-63.48873	0.0001
Test critical values:	1% level		-3.430459	
	5% level		-2.861472	
	10% level		-2.566775	

Augmented Dickey–Fuller test (ADF) tests the null hypothesis that a unit root is present in a time series data, essentially it tests the presents of stationarity. The alternative

hypothesis suggested the presents of stationarity and the null hypothesis suggests the unit root. The more negative it is, the stronger the rejection of the hypothesis that there is a unit root. The calculated t-statistic is more negative (-63.48873) and had a significant corresponding probability value and suggested that the data was stationary before differencing it.

4.3 Results pertaining to Hypothesis 1

The models in table 10 below were estimated to test the Hypothesis:

> $\boldsymbol{H_1}$: *There is a positive relationship between wealth inequality and entrepreneurial activity for individuals at the top end of the wealth distribution such that as wealth inequality increases, entrepreneurial activity increases for these individuals.*

Model 1 shows the relationship between wealth inequality and self-employment explained by a panel linear fixed model. Self-employment is considered as a dependent variable and wealth inequality as an independent variable. Based on the output in table 3, the relationship between self-employment and wealth inequality can be summarised as follows: $\boldsymbol{self - employed = 0.5398564 + 0.5925628 * wealth\ inequality.}$

The probability values of both the constant and Gini coefficient are not significant as their probability values are greater than 0.05. The corresponding F values revealed that the model is less important as it was also insignificant. In model 2, the control variables race, gender, age and education were added to the model. Again, the constant and wealth inequality remained not significant, however sex and education were significant with probability values less than 0.05. The model remained insignificant with Prob >F = 0.1597. The results do not provide support for the hypothesis stated above, therefore we do not accept this hypothesis.

Table 10: Model Results: the relationship between wealth entrepreneurial activity and wealth inequality for top percentile

Dependent variable: Self-employed	Estimated regression models	
Independent Variables	**(1)**	**(2)**
Constant	**0.5398564** **Std. Err** = 0.4924182 **t** = 1.1 **P > t** = 0.273 **95% CI** = [-0.4258; 0.1.505479]	**0.4290134** **Std. Err** = 0.4935925 **t** = 0.87 **P > t** = 0.385 **95% CI** = [-0.5389; 1.396939]
Wealth inequality	**0.5925628** Std. Err = 0.6022183 t = 0.98 P > t = 0.325 **95% CI** = [-0.5884; 1.773501]	**0.7157618** **Std. Err** = 0.6027662 **t** = 1.19 **P > t** = 0.235 **95% CI** = [-0.4663; 1.897775]
Race		**-0.000677** Std. Err = 0.0033623 t = -0.2 P > t = 0.84 **95% CI** = [-0.0073; 0.005917]
Sex		**0.0153353**** Std. Err = 0.0072714 t = 2.11 P > t = 0.035 **95% CI** = [0.00108; 0.029595]
Age		**0.0001283** Std. Err = 0.0001748 t = 0.73 P > t = 0.463 **95% CI** = [-0.0002; 0.000471]
Education		**-0.002091**** Std. Err = 0.0008149 t = -2.57 P > t = 0.01 **95% CI** = [-0.0037; 0.00049]
Prob>F **P-value<0.05 ****	2.15	1.98

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

4.1 Results pertaining to Hypothesis 2

The models in table 11 below were estimated to test the Hypothesis:

$\boldsymbol{H_2}$: *There is a negative relationship between wealth inequality and entrepreneurial activity for individuals at the bottom end of the wealth distribution such that as wealth inequality increases, entrepreneurial activity decreases for these individuals.*

Table 11: Model Results: the relationship between wealth entrepreneurial activity and wealth inequality for bottom percentile

Dependent variable: Self-employed	**Estimated regression models**	
Independent Variables	**(3)**	**(4)**
Constant	**0.22311** **Std. Err** = 0.12461 **t** = 1.79 **P > t** = 0.073 **95% CI** = [-0.0211; 0.46736]	**0.19697**** **Std. Err** = 0.12686 **t** = 1.55 **P > t** = 0.021 **95% CI** = [-0.0517; 0.44564]
Wealth inequality	**1.01586**** Std. Err = 0.15777 t = 6.44 P > t = 0.000 **95% CI** = [0.7066; 1.32512]	**1.04788**** **Std. Err** = 0.15951 **t** = 6.57 **P > t** = 0.000 **95% CI** = [0.73521; 1.36055]
Race		**0.00032** Std. Err = 0.00131 t = 0.24 P > t = 0.808 **95% CI** = [-0.0022; 0.00288]
Sex		**0.00483** Std. Err = 0.00315 t = 1.53 P > t = 0.125 **95% CI** = [-0.0013; 0.01101]
Age		**-0.00005** Std. Err = 0.000086 t = -0.59 P > t = 0.558 **95% CI** = [-0.0002; 0.00012]
Education		**-0.0006** Std. Err = 0.0004 t = -1.63 P > t = 0.104 **95% CI** = [-0.0014; 0.00013]
Prob>F **P-value<0.05 ****	0.0000	0.0000

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

The above model results explain the relationship between self-employment and the wealth inequality of the bottom percentile (those who are considered to be poor). The coefficient for the constant is not significant (P> t =0.073). However, the coefficient for

wealth inequality is significant and positive with P>t = 0.000 and the estimated coefficients within the estimated confidence interval range. The f-values provide the evidence of the goodness of fit of the model, and as shown in Table 11, the f-value probability is less than 0.05 which implies that the model is good in terms of explaining the self-employment based on wealth inequality. The relationship can be best summarised by the following equation

$$\boldsymbol{self - employed = 0.22311 + 1.01586 * wealthy\ inequality}.$$

The relationship between the same variables, self-employed and wealth inequality, for the bottom percentile was also investigated in the presence of control variables that are gender, age, education and race, the resulting model 4 is shown in the table 11. After incorporating the control variables, the constant became significant and the wealth inequality remained significant. The effect of the control variables was non-significant (with probability values greater than 0.05). The above relationship can be summarised as follows

$$\boldsymbol{self - employed = 0.19697 + 1.04788 * wealth\ inequality - 0.0006 * education - 5E - 05 * age + 0.00483 * gender + 0.00032\ race.}$$

The results do not provide support for the hypothesis stated above, instead the evidence indicates that there is a positive significant relationship between wealth inequality and entrepreneurship for those at the bottom of the wealth distribution, therefore we do not accept this hypothesis.

4.2 Results pertaining to Hypothesis 3

The models in table 12 below were estimated to test the hypothesis:

$\boldsymbol{H_3}$: *There is a negative relationship between wealth inequality and entrepreneurial activity (self-employment/employer) such that as wealth inequality increases, entrepreneurial activity decreases in South Africa.*

Table 12: Model Results: the aggregate relationship between wealth entrepreneurial activity and wealth inequality in South Africa

Dependent variable: Self-employed	**Estimated regression models**	
Independent Variables	**(5)**	**(6)**
Constant	**0.5552**** **Std. Err** = 0.0766 **t** = 7.25 **P > t** = 0.000 **95% CI** = [0.40506; 0.70534]	**0.53659**** **Std. Err** = 0.07813 **t** = 6.87 **P > t** = 0.000 **95% CI** = [0.38344; 0.68973]
Wealth inequality	**0.59013**** Std. Err = 0.09702 t = 6.08 P > t = 0.000 **95% CI** = [0.39996; 0.7803]	**0.61097**** **Std. Err** = 0.09826 **t** = 6.22 **P > t** = 0.000 **95% CI** = [0.41837; 0.80357]
Race		**0.00172** Std. Err = 0.00078 t = 2.19 P > t = 0.029 **95% CI** = [0.0018; 0.00325]
Sex		**0.00339** Std. Err = 0.00193 t = 1.76 P > t = 0.079 **95% CI** = [-0.0004; 0.00718]
Age		**-0.00007** Std. Err = 0.000051 t = -1.35 P > t = 0.176 **95% CI** = [-0.0002; 0.000031]
Education		**-0.0003** Std. Err = 0.00024 t = -1.39 P > t = 0.166 **95% CI** = [-0.0008; 0.00014]
Prob>F **P-value<0.05 ****	0.0000	0.0000

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

The models 5 and 6 were built using the full data set and the results are displayed in the above table. It is quite clear that wealth inequality and self-employment are significantly related as their probability values are approximately equal to zero, this implies that given the wealth inequality, a lot can be said about the self- employment status. The F-value showed a very strong fit (goodness of fit of the model) with a probability value less than 0.05. The estimated coefficient of the parameters of the model are defined within the

estimated confidence interval. The relationship between self-employment and wealth inequality based on the full data set can be best summarised by the following model equation;

$$\boldsymbol{self - employed = 0.5552 + 0.59013 * wealthy\ inequality}$$

Control variables were added to the model and the results are shown in the table above. The variable of interest wealth inequality remained significant. Race showed some significance in explaining self-employment in South Africa. Incorporating the control variables in the model, the equation can be summarised as follows:

$$\boldsymbol{self - employed = 0.53659 + 0.61097 * wealth\ inequality - 0.0003 * education - 7E - 05 * age + 0.00339 * gender + 0.00172 * race.}$$

The results do not provide support for the hypothesis stated above, instead the evidence indicates that there is a positive significant relationship between wealth inequality and entrepreneurship in South Africa, therefore we do not accept this hypothesis.

4.3 Results pertaining to Hypothesis 4

The models in table 6 below were estimated to test the Hypothesis:

$\boldsymbol{H_4}$: *There is a positive relationship between wealth inequality and increased casual labouring in South Africa such that as wealth inequality increases, casual labour increases in South Africa.*

Table 13: Model Results: the aggregate relationship between wealth entrepreneurial activity and wealth inequality in South Africa

Dependent variable: Casual Labour	Estimated regression models	
Independent Variables	**(7)**	**(8)**
Constant	**0.33388**** **Std. Err** = 0.08053 **t** = 4.15 **P > t** = 0.000 **95% CI** = [0.17604; 0.49172]	**0.34459**** **Std. Err** = 0.08216 **t** = 4.19 **P > t** = 0.000 **95% CI** = [0.18356; 0.50562]
Wealth inequality	**0.8734**** Std. Err = 0.102 t = 8.56 P > t = 0.000 **95% CI** = [0.67348; 1.07333]	**0.8623**** **Std. Err** = 0.10332 **t** = 8.35 **P > t** = 0.000 **95% CI** = [0.65978; 1.06482]
Race		**-0.0008** Std. Err = 0.00082 t = -1.01 P > t = 0.311 **95% CI** = [-0.0025; 0.00078]
Sex		**-0.0017** Std. Err = 0.00203 t = -0.85 P > t = 0.394 **95% CI** = [-0.0057; 0.00225]
Age		**-0.000039** Std. Err = 0.000054 t = 0.73 P > t = 0.468 **95% CI** = [-0.00007; 0.000014]
Education		**0.00000942** Std. Err = 0.00025 t = 0.04 P > t = 0.97 **95% CI** = [-0.0005; 0.0005]
Prob>F **P-value<0.05 ****	0.0000	0.0000

Source: Author's own calculation using sample data from NIDS (2011;2015;2017)

The results in model 7 and 8 show a very strong significant relationship between wealth inequality and casual labour. The corresponding probability values to the t values are approximately equal to zero. Given wealth inequality, casual labour can be determined by the following equation

$$\boldsymbol{casual\ labour = 0.33388 + 0.8734 * wealthy\ inequality}$$

The goodness of fit of the model was confirmed significant as the F-values is significant at 0.05.

The relationship of casual labour to wealth inequality was also assessed using the control variables in the study. The presence of control variables did not contribute any significance but the wealth inequality remained significant. The control variables do not bring much effect to casual labour in the presence of the wealth inequality. The wealth inequality had a positive impact on casual labour as the F-value of the full model is significant. The relationship can be summarised as follows; $\boldsymbol{casual\ labour = 0.34459 + 0.8623 * wealth\ inequality - 9.42E - 06 * education - 7E - 05 * age + 0.3.9E - 05 * gender - 0.0008 * race.}$

The results in this study provide support for the hypothesis stated above, they indicate a positive significant relationship between wealth inequality and casual labour in South Africa.

4.4 Summary of the results

In this chapter, the results of the models where presented. The demographic profile of this balanced panel indicates that it is dominated by females at 59% and Black African individuals at 81%. Some associates between demographic variables and variables under consideration in this study were significant while some where not. In particular associations between variable pairs sex and self-employed, year and self-employed, year and casual labour were not significant. On the other hand associations between variable pairs sex and races, sex and casual labour, race and self-employed, race and casual labour were significant at the five percent confidence level with Pearson Chi-squared values of Prob < 0.05.

The total number of observations in this study was 23 400. Vehicle assets had the highest mean of all the assets at R118 972 and financial liabilities had the highest mean of all the liabilities with mean R160 463. The values for the Gini-coefficients decreased from year 2010 to 2014 and increased in year 2017 and 85% of net worth in this balanced panel is consistently concentrated in the top 10% of the population for all the years in this sample.

The data gives evidence supporting the hypothesis that casual labour has a positive relationship with wealth inequality such that as wealth inequality increases, casual labour increases in South Africa. However, the data does not provide support for any of the remaining three hypotheses. The data suggests that there is a positive significant relationship between wealth inequality and entrepreneurship for those at the bottom of the wealth distribution instead of a negative relationship as hypothesised. Additionally, the data results suggest that there is a positive significant relationship between wealth inequality and entrepreneurship at an aggregate level instead of a negative relationship as hypothesised.

5. CHAPTER 5: DISCUSSION OF THE RESULTS

5.1 Introduction

This chapter explains and discusses the results in more detail and in the context of previous literature. It interprets the findings, beginning with a brief discussion of demographics and descriptive statistics, highlighting pertinent points. Thereafter, the results are discussed and consolidated in relation to each of the hypothesis in the study.

5.2 Demographic profile of respondents

In terms of the sex distribution, the results indicate that females are slightly over-represented in our sample, compared to the national population estimates; 59% of the balanced sample is female while 41% is male in this sample; national population estimates indicate that approximately 47% of the population is male while 53% of the population is female (Statistics of South Africa, 2017). The race distribution in this balanced sample are mostly in line with recent population estimates published by Stats SA with one exception, the white subset of the population is slightly underrepresented at 5% against the 8% Stats SA national population estimate. Stats SA estimates that at a national level, the South African population consists of 80.8% Black Africans, 8.8% coloured people, 2.5% Indian/Asians, 8% Whites (Statistics of South Africa, 2017).

In terms of sex and self-employment, these is no significant association between these two variables in our sample. However, there is an association between sex and casual labour. This sample is characterised by low levels of self-employment at 2.11% which is lower than other measures of entrepreneurial activity in literature; for example, Xavier-Oliveira et al., (2015) found that for South Africa, 2.52% of individuals in their sample were involved in necessity entrepreneurship and 5.18% were involved in opportunity entrepreneurship. That is a total of 7.7% against our sample rate of 2.11%. In terms of wealth, the Deciles (90-100) owned more (85%) of the wealth across the years while the rest of the population owned nothing. Given the high levels of inequality in net worth in South Africa, this is expected and is consistent with other empirical evidence which shows the top 10% of households in the distribution of

household wealth held 71% of net wealth while the bottom 60% held only 7% (The World Bank, 2018).

5.3 Discussion pertaining to Hypothesis 1

This first hypothesis is:

$\boldsymbol{H_1}$:*There is a positive relationship between wealth inequality and entrepreneurial activity for individuals at the top end of the wealth distribution such that as wealth inequality increases, entrepreneurial activity increases for these individuals.*

The resulting model that was estimated from the data can be summarised as follows

$$\boldsymbol{self - employed = 0.5398564 + 0.5925628 * wealth\ inequality}$$

The estimated model indicates the same direction as the relationship hypothesised since there is a positive coefficient, however since neither the coefficients nor the full model itself are statistically significant, the evidence does not provide support for the hypothesis stated above, therefore this study does not accept this hypothesis.

In this balanced sample, the top percentile used for this model held more than 85% of the entire wealth. However, this evidence implies that despite this concentration of wealth, increased wealth inequality is not significantly increasing the probability of entering entrepreneurship for these individuals. A logical explanation could be that the concentration of wealth is not large enough for the increase in entrepreneurial activity. Literature suggests that wealth can be utilised in entrepreneurial investment. Individuals' amassed capital may be invested toward increased future productivity; this is the essence of entrepreneurship (Bjørnskov & Foss, 2013; Solow, 1970, cited by Packard & Bylund, 2017). However, when income inequality is eliminated, such accumulation of wealth would be unlikely, and income would be utilised for immediate consumption. It follows then that without wealthy venture capitalists, bankers, or angel investors, the rate of entrepreneurship would be curtailed to some extent (Packard & Bylund, 2017). However, in our balanced sample, we see that the maximum value for net worth is R518 000. This is relatively wealthy in the balanced sample, however it is not even a million rand in net worth. It is highly unlikely that the individual owning those assets is a venture capitalist or an angel investor, nor is it

likely that this individual will form part of the wealthy early adopters who stomach the risks and uncertainties of novel products early in the product's life cycle (Forbes, 2000; Hayek, 1978), and assist in helping these products to diffuse (Rogers, 2003, cited by Packard & Bylund, 2017).

5.4 Discussion pertaining to Hypothesis 2

This second hypothesis is:

$\boldsymbol{H_2}$: *There is a negative relationship between wealth inequality and entrepreneurial activity for individuals at the bottom end of the wealth distribution such that as wealth inequality increases, entrepreneurial activity decreases for these individuals.*

The relationship given the data can be summarised as follows

$$\boldsymbol{self - employed = 0.19697 + 1.04788 * wealth\ inequality - 0.0006 * education - 5E - 05 * age + 0.00483 * gender + 0.00032race.}$$

In this case, the full model, the constant and wealth inequality are significant. The direction of the relationship however is positive, indicating that for people at the bottom of the wealth distribution, there is a positive significant relationship between wealth inequality, such that as wealth inequality increases the probability of being self-employed increases for these individuals. The results do not provide support for the hypothesis stated above, therefore we do not accept this hypothesis.

This hypothesis was predicated on the suggestion that low entrepreneurial activity in South Africa amid high inequality could be explained by the fact that that inequality may alter the ability of individuals to gather enough resources needed to be an entrepreneur. Individuals must gather the combination of resources to make the transition to self-employment and even more so, the more demanding threshold of being an employer. Sarkar et al. (2018) found that greater inequality leaves those at the lower end of the unequal distribution unable to make the transition to self-employment in India. However, the same relationship is not observed in this balanced sample instead, there is a positive relationship between wealth inequality and entrepreneurial activity.

This finding is in line with the potential positive relationship proposed by Lippmann et al. (2005). They argue that individuals on the lower end of the unequal distribution resort to self-employment out of economic necessity; it is likely that this is the dynamic that is being observed in this study. Given that the aggregate relationship between wealth inequality and entrepreneurial activity is found to be positive and significant in this study, but it is not found to be significant for the top end of the wealth distribution, it is more likely that this relationship is driven by the middle and bottom end of the wealth distribution and literature suggests that this is likely to be necessity entrepreneurship.

5.5 Discussion pertaining to Hypothesis 3

The third hypothesis is:

$\boldsymbol{H_3}$: *There is a negative relationship between wealth inequality and entrepreneurial activity (self-employment/employer) such that as wealth inequality increases, entrepreneurial activity decreases in South Africa.*

The relationship between self-employment and wealth inequality, based on the full data set can be best summarised by the following model equation

$$\boldsymbol{self - employed = 0.53659 + 0.61097 * wealth\ inequality - 0.0003 * education - 7E - 05 * age + 0.00339 * gender + 0.00172 * race.}$$

The variable of interest, wealth inequality and the constant are significant. Race showed some significance in explaining self-employment in the balanced sample. In this case, the relationship between wealth inequality and self-employment is significant but is unexpectedly positive. As wealth inequality increases, the probability of being self-employed increases in the balanced sample. Again, the results do not provide support for the above hypothesis.

In terms of the hypothesis put by Jung, Seo, and Jung (2018), suggesting that income distribution may influence entrepreneurial activity through its effect on innovation, they propose contrasting effects, namely, market size and price effects. The price effect refers to the positive effect of inequality on innovation due to the fact that

wealthy people are willing to pay for new products; this apparent demand generates incentives for potential entrepreneurs driven by the desire for financial profits. They suggest that in a society with a bigger wealthy population, the price effect will be larger, resulting in more entrepreneurs because entrepreneurs are incentivised to chase higher profits. Even though we see a positive relationship between wealth inequality and entrepreneurial activity, it is unlikely to be due to the hypothesis put by these authors, especially given the results found with regard to this study's first hypothesis. This study found that there is a statistically non-significant positive relationship between wealth inequality and entrepreneurial activity for the top end of the wealth distribution.

However, these results are in line with evidence found by Xavier-Oliveira et al. (2015) in their empirical study of the influence of economic inequality onto the probability of entry into necessity and opportunity-based entrepreneurship. The authors find evidence that confirms that as inequality increases, both necessity and opportunity-based entrepreneurship increase; this effect is higher for necessity than opportunity-based entrepreneurship. Their empirical evidence corroborates the theoretical hypothesis of Lippmann et al. (2005) that inequality leads to an increase in both necessity and opportunity based entrepreneurial activity. South Africa is one of the 31 countries included in their sample and it is worth noting that although South Africa has the highest Gini index in the sample (67.40) only 2.52% (against a sample average of about 4%) of individuals were identified as necessity-based entrepreneurs and 5.18% (against a sample average about of 10%) of individuals were identified as opportunity-based entrepreneurs. This data for South Africa specifically, is lower with the mean in this study, given that South Africa is the most unequal country in the sample, but it has a lower than average percentage of individuals engaged in necessity and opportunity-based entrepreneurship. This current study does not differentiate between necessity and opportunity entrepreneurship, however the evidence that there is a positive relationship between wealth inequality and entrepreneurship at an aggregate level is consistent with the finding of Xavier-Oliveira et al. (2015), contrary to hypothesis 3. The data seems to imply that there is a positive-significant relationship between wealth inequality and entrepreneurial activity even though the levels of entrepreneurship in South Africa are low. Perhaps this lower than average entrepreneurial activity is due to the fact that although there is high inequality of

wealth, the levels of wealth in the country are still too low to see a significant increase in the amount of entrepreneurial activity at an aggregate level.

5.6 Discussion pertaining to Hypothesis 4

The fourth hypothesis is:

$\boldsymbol{H_4}$: *There is a positive relationship between wealth inequality and increased casual labouring in South Africa such that as wealth inequality increases, casual labour increases in South Africa.*

The relationship can be summarised as follows;

$$\boldsymbol{casual\ labour = 0.34459 + 0.8623 * wealth\ inequality - 9.42E - 06 * education - 7E - 05 * age + 0.3.9E - 05 * gender - 0.0008 * race.}$$

This estimated model indicates a positive statistically significant relationship between wealth inequality and the probability of being engaged in casual labour. Therefore, results in this study provide support for the hypothesis stated above.

5.7 Conclusion

The results in this study corroborate other empirical data indicating that South Africa is characterised by low levels of entrepreneurial activity as seen by the low levels of self-employment in this balanced panel sample. The low rate of self-employment is consistent and with the low "Total Early Stage Entrepreneurial Activity (TEA) rates observed in GEM data (Herrington, Kew , & Mwanga, 2017). Three of the four hypotheses presented in this study did not hold. However, the results indicated that a statistically significant relationship does exist between wealth inequality and entrepreneurial activity. The data indicates that a positive statistically significant relationship is likely to exist between wealth inequality and entrepreneurial activity at an aggregate level and for those at the lower end of the wealth distribution. This is similar to empirical findings by authors Lecuna (2014) and Xavier-Oliveira et al., (2015). While it is apparent that this relationship is not statistically significant for those at the top-end of the wealth distribution. Furthermore, even though this

relationship exists, is positive and statistically significant, a positive statistically significant relationship exists between casual labouring and wealth inequality in South Africa. This is indicative of the need for survival amidst a climate of low employment opportunities and low entrepreneurial activities.

6. CHAPTER 6: CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter begins by outlining the conclusions of the study and stating their implications and recommendations that are drawn as a result. Thereafter the limitations of the study are explained and suggestions of how these limitations maybe overcome in future and future research suggestions are outlined.

6.2 Conclusions of the study

This study finds evidence that suggests that amidst low levels of entrepreneurial activity, at an aggregate level, there is a positive relationship between wealth inequality and entrepreneurial activity in South Africa. This was not expected and is against the hypothesis developed in this literature review. It also finds evidence that suggests that this relationship is not significant across the entire wealth distribution, and in particular, it is not significant for the top end of the distribution (wealthy individuals). The relationship between casual labour and entrepreneurial activity is also statistically significant and positive at an aggregate level.

This study has contributed to literature by bridging the gap between development economics and entrepreneurship by investigating the association between dimensions in both disciplines instead of one or the other in isolation. It also found evidence that brought insight to the relationship between casual labour and wealth inequality which deals with the aspect of alternatives to employment in a climate of high unemployment and low entrepreneurial activity.

The evidence found in this study also contributes by indicating the type of relationship that is observed in between the variables of interest (wealth inequality and entrepreneurial activity) in a developing country context (which is currently limited). Furthermore, this is the first study (to the best of our knowledge) that investigates this relationship using the dimension of wealth inequality. Lastly, it is established in literature that there is a significant relationship between inequality and entrepreneurial activity, although there is a lack of consensus on whether it is always positive, negative, linear or an inverted u-shape relationship and under what circumstances it

is so. The results in this study provide evidence to establish that the relationship between wealth inequality and entrepreneurial activity is positive in South Africa.

6.3 Implications and Recommendations

The findings indicate there is a statistically significant positive relationship between wealth inequality and entrepreneurial activity in South Africa, wealth inequality is high but the rate of entrepreneurial activity is still low by international standards. This means that a wider range of interventions need to put in place to improve entrepreneurial propensity in this country.

6.4 Limitations of the study

This research has many limitations. Firstly, this study does not measure entrepreneurship in its true sense but rather uses proxies, which is a limitation in this study. Secondly, there are other control variables that explain the likelihood of an individual becoming an entrepreneur that we are missing in this dataset, variables such at motivations that also vary over time.The omission of these variables is likely to cause unreliability in our model estimates. Additionally, there are variables that are not available in this dataset, such as psychological factors (intention, motivations) and variables that capture the nature of institions that are important but not included in the models, the fixed effects control for these factors to some extent at the individual level. However there is still exists a possibility that unmeasured time-varying confounding exists. Therefore, this study cannot make causal interpretations.

A massive limitation of the study is that there was high attrition and missing data in subsequent waves; given that the analysis was restricted to a balanced panel i.e. those who successfully interviewed in all three waves. Therefore the analysis cannot be interpreted as being nationally representative, which would be the case if each wave was treated as an independent cross-section.

Furthermore, since the balanced panel is derived from a original complex sample, the unweighting of observations may lead to bias in model parameters if certain subpopulations are oversampled (Thomas & Heck, 2001). A second potential peril due to complex sample designs in the original NIDS data is that these lead to

conservative estimates of standard errors and the increased risk of committing Type I errors in testing the hypothesis; that is declaring an effect when there is none (Thomas & Heck, 2001). One corrective strategy is to leave all things as is but examine each parameter at a more conservative critical alpha value, a value more conservative than the standard 0.05 (Thomas & Heck, 2001). In this study all the statisstically significant p-values corresponding to the parameter, wealth inequality in the models estimated, were significant at a 0.001 alpha value, so it is unlikely that a Type I error was commited due to ignored complex sample designs.

Also, this study only utlised South African data, therefore, the data cannot be generalised - more cross-country data would allow for generalised conclusions. From a theoretical point of view examining wealth inequality and entrepreneurial activity may present a problem of reverse causality; it is possible that people may have the tendency to self identify as self-employed out of pure necessity in an environment of high wealth inequality due to the lack of jobs in the economy (Lecuna, 2014). This is also more of a likelihood in South Africa where unemployment rates are very high.

6.5 Suggestions for further research

This study suggests a positive relationship between inequality and entrepreneurship; more statistical research is needed with regard to the potential non-linear relationship between entrepreneurship and inequality, specifically looking at feedback loops, where entrepreneurship, through disruptive innovations, for example, can influence inequality levels. Studying the particular conditions in which the reversal of the correlation between wealth inequality and entrepreneurial activity may be valuable.

7. CHAPTER 7: REFERENCES

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1. Appendix A: Research Instrument

Source: (National Income Dynamics Study, 2018)

Section B: Demographics

INTERVIEWER READ OUT: We would like to ask you some questions about your background.						Validation Rule	Skips
CB1a	**Computer check:** Is this person the same person who has filled in the household roster?	Yes		1			B4.1
		No		2			
B1 *dob_d* *dob_m* *dob_y*	What is your date of birth? **Interviewer: If don't know write "-9". If refused write "-8"** *No display*	*ADOBDate* (SD) **dd**	*ADOBMonth* **mm**	*ADOBYear* **year**		*Warn if panel value!=current value*	
B2 *gen*	What is your gender? *Display: ADGender*	Male			1	*Warn if ADGender!= current value*	
		Female			2		
		Refused			-8		
		Don't Know			-9		
B3 *popgrp*	What population group do you belonging to? *Display: ADPopGrp*	African			1		
		Coloured			2		
		Asian/Indian			3		
		White			4		
		Other (specify) *popgrp_o*			5		
		Refused			-8		
		Don't Know			-9		

Section E: Labour market participation

INTERVIEWER READ OUT: In this section we find out about your employment history.				Validation Rule	Skips
Ea1 *emact1yrago*	Which one of the following best describes what you were doing one year ago? **Interviewer: Read out options** ***Interviewer: Do not pick Other if they do any kind of work***	Working for pay	1		
		Self-employed	2		
		Working on own plot or looking after livestock	3		
		Helping another family member with their business, without pay	4		
		Full-time scholar or student at school, university, college or another educational institution	5		
		Homemaker (looking after children / others / home)	6		
		Long term sick or disabled	7		
		Retired	8		
		Unemployed and actively searching for a job in the last four weeks	9		
		Unemployed but not actively searching for a job in the last four weeks	10		
		Other (Specify)	11		
		Refused	-8		
		Don't Know	-9		

INTERVIEWER READ OUT: We understand that earnings is a difficult and sensitive question. However, due to its importance, we would like to ask you a range into which your last month's earnings from casual work falls					
Ed1 *emc*	Have you done any casual work to earn money in the past 30 days?	Yes	1		
		No	2		Ee1
		Refused	-8		Ee1
		Don't know	-9		Ee1

INTERVIEWER READ OUT: We now want to ask you some questions about **self-employment** – that is if you work for yourself, even if this is in partnership with other people. The questions are for **all** people, even if you have a main job or are in full-time education, and therefore can only do this kind of work on the side.					
				Validation Rule	Skips
Ec1 *ems*	Have you engaged in any self-employment activities during the last month? For example, you might buy and sell goods, be a commercial farmer, work for yourself as a doctor or hairdresser or be a freelance consultant.	Yes	1		
		No	2		Ed1
		Refused	-8		Ed1
		Don't know	-9		Ed1

				Validation Rule	Skips
Ec6b *emsnumemp*	How many employees are there at your place of work, excluding yourself?	1-4	1		
		5-9	2		
		10-19	3		
		20-49	4		
		50 or more	5		
		None	6		
		Refused	-8		
		Don't know	-9		

Section H: Education

				Validation Rule	Skips
INTERVIEWER READ OUT: We would like to ask you about your education.					
H1 *edschgrd*	What is the highest grade in school that you have successfully completed? Do not count the final year you were in school if you did not successfully complete the year. **Interviewer: Select from drop-down list** **Codes 16 to 23 are not applicable** *No Display*	Highest school grade		*valid range check codes are 00-15 + 24-25 Warn if new answer doesn't match previous ADHighestGrade*	H33 if = 25
		If other, specify here *edschgrd_o*			
		Refused	-8		
		Don't Know	9		
H6 *edschmth*	What is the highest grade or level at school in which you studied mathematics? This refers to highest grade studied and not necessarily highest grade passed. Incomplete years should also be included. **Interviewer: Select from drop-down list** **Codes 16 to 23 are not applicable** **Interviewer: If don't know write "-9". If refused write "-8"** *No display*	Highest grade Mathematics			
H7 *edter*	Have you successfully completed any diplomas, certificates or degrees outside of school?	Yes	1		
		No	2	*Warn if ADDiplomasComplete goes from Yes to No*	CH10a
		Refused	-8		CH10a
		Don't know	-9		CH10a

				Validation Rule	Skips
H8 *edterlev*	What is the highest level of education you have successfully completed? Do not include any courses that you did not successfully complete. **Interviewer: Select from drop-down list.** **Codes 00 to 12 and 25 are not applicable.**	Highest level of education		*valid range: code 00-12 and 25 not applicable*	
		If other, specify here			
		Refused	-8		
		Don't know	-9		

Section G: Personal ownership and debt

INTERVIEWER READ OUT: Now we would like to ask you about whether you have received any large payouts in the **last four years**.					
		1 Over the **last four years**, have you received income from any of the following sources?			
		Yes	No	Refused	Don't Know
G1 *recinh*	Inheritance	1	2	-8	-9
G2 *recgif*	Large gift	1	2	-8	-9
G3 *recjob*	Job-related payout, such as retrenchment or disability package	1	2	-8	-9
G4 *recprof*	Profit from the sale of a property or any other asset	1	2	-8	-9
G5 *recfin*	Payout from financial product, for example retirement fund, provident fund, life insurance	1	2	-8	-9
G6 *recdob*	Income from lobola	1	2	-8	-9
G7 *recoth*	Any other large payout, specify *(recoth_o)*	1	2	-8	-9

INTERVIEWER READ OUT: Now we would like to ask you about certain items that you may or may not own.							
		1 Do you personally own at least one [...] in good working order?				Computer Check: If Answer not=1 skip to Next Question	2 What is the current total resale value for all [...] that you personally own? **Interviewer: If don't know write "-9". If refused write "-8"** Rands
		Yes	No	Refused	Don't Know		
G8.1 *ownvehpri*	Motor vehicle (including bakkie or truck)	1	2	-8	-9		*ownvehpr_v*
G8.2 *ownmot*	Motorcycle/scooter	1	2	-8	-9		*ownmot_v*
G8.3 *owncom*	Computer	1	2	-8	-9		
G8.4 *owncel*	Cell phone	1	2	-8	-9		

INTERVIEWER READ OUT: Now we would like to ask you about certain financial obligations you might or might not have.						
G11.1 *dtbnd*	Do you personally have a **Home loan / Bond** on this dwelling?		Yes	1		
			No	2		G11.8
			Refused	-8		G11.8
			Don't Know	-9		G11.8
G11.3 *dtbnd_b*	What is the remaining outstanding balance on your Home loan / Bond?		Amount			
			Refused			
			Don't know			
G11.4 *dtbnd_joint*	Is this debt in your name only or jointly with your husband, wife, partner or someone else?		My name only	1		G11.8
			Held jointly	2		
			Refused	-8		G11.8
			Don't Know	-9		G11.8
G11.5	Who else do you share this debt with?					
		G11.5.1:	Person 1 *dtbnd_jointpid1*			
		G11.5.2:	Person 2 *dtbnd_jointpid2*			
G11.6 *dtbnd_sharev*	Of the total outstanding balance, what Rand value is yours?		Amount			G11.8
			Refused	-8		
			Don't know	-9		
G11.7 *dtbnd_sharebrac*	Would you say your share of the outstanding balance is					
	G11.7.1	More than or less than half?	More than half	1		G11.7.3
			About equal to half	2		G11.8
			Less than half	3		
			Refused	-8		G11.8
			Don't know	-9		G11.8
	G11.7.2	More than or less than a quarter?	More than a quarter	1		
			About equal to a quarter	2		
			Less than a quarter	3		G11.8
			Refused	-8		
			Don't know	-9		
	G11.7.3	More than or less than three quarters	More than three quarters	1		
			About equal to three quarters	2		
			Less than three quarters	3		
			Refused	-8		
			Don't know	-9		
G11.8 *ownoth_ind*	Do you own any other properties or land whether for residential or business purposes? Please include any foreign properties.		Yes	1		
			No	2		G12.1
			Refuse	-8		G12.1
			Don't Know	-9		G12.1
G11.9 *ownothtype#_ind*	What kind of property is this? **Interviewer: Multiple mention allowed**		Flat(s)	1		
			House(s)	2		
			Farm(s)	3		
			Other commercial buildings (shops, factories, etc.)	4		
			Plot(s)	5		
			Other land	6		
			Refused	-8		
			Don't know	-9		
G11.10 *ownoth_share*	Do you share ownership of any of these properties with anyone else?		Yes	1		G11.11b
			No	2		
			Refused	-8		
			Don't know	-9		
G11.11a *mrkvoth_ind*	What would be a reasonable market value for which all properties could be sold together?		Amount	**R**		
			Refused	-8		G11.12
			Don't Know	-9		
G11.11b *mrkvoth_indshare*	If you were to sell your share of all these properties, what would be a reasonable market value for your share?		Amount	**R**		
			Refused	-8		
			Don't Know	-9		
G11.12 *ownothpaid_ind*	Is/Are this/these property/properties fully paid off?		Yes	1		G12.1
			No	2		
			Refuse	-8		
			Don't know	-9		
CG11.13	**Computer check:** Does this person share ownership?		Yes	1		G11.13b
			No	2		

G11.13a *ownowdtot_ind*	What is the total amount of the bond(s) still owing on this/these property/properties?	Amount	R			G12.1
		Refuse	-8			
		Don't know	-9			
G11.13b *ownowdtot_indshare*	What is the total amount of debt you personally owe on all these properties?	Amount	R			
		Refuse	-8			
		Don't know	-9			
G12.1 *dtveh*	Do you personally have **Vehicle finance (car payment)**	Yes	1			
		No	2			G13.1
		Refused	-8			G13.1
		Don't Know	-9			G13.1
G12.3 *dtveh_b*	What is the remaining outstanding balance on your Vehicle finance (car payment)?	Amount				
		Refused				
		Don't know				
G12.4 *dtveh_joint*	Is this debt in your name only or jointly with your husband. wife, partner or someone else?	Self	1			G13.1
		Joint	2			
		Refused	-8			G13.1
		Don't Know	-9			G13.1
G12.5	Who else do you share this debt with?					
	G12.5.1:	Person 1 *dtveh_jointpid1*				
	G12.5.2:	Person 2 *dtveh_jointpid2*				
G12.6 *dtveh_sharev*	Of the total outstanding balance, what Rand value is yours?	Amount				G13.1
		Refused	-8			
		Don't know	-9			
G12.7 *dtveh_sharebrac*	Would you say your share of the outstanding balance is					
	G12.7.1 More than or less than half?	More than half	1			G12.7.3
		About equal to half	2			G13.1
		Less than half	3			
		Refused	-8			G13.1
		Don't know	-9			G13.1
	G12.7.2 More than or less than a quarter?	More than a quarter	1			
		About equal to a quarter	2			
		Less than a quarter	3			G13.1
		Refused	-8			
		Don't know	-9			
	G11.7.3 More than or less than three quarters	More than three quarters	1			
		About equal to three quarters	2			
		Less than three quarters	3			
		Refused	-8			
		Don't know	-9			

		1 Do you personally have a [...]? **If Answer Not=1 skip to next item**				3 What is the remaining outstanding balance on your [...]?
		Yes	No	Refused	Don't Know	Rands
G13 *dtbnk*	Personal loan from a bank	1	2	-8	-9	*dtbnk_b*
G14 *dtmic*	Personal loan from a micro-lender	1	2	-8	-9	*dtmic_b*
G15 *dtstubnk*	Study loan with a bank	1	2	-8	-9	*dtstubnk_b*
G16 *dtstuo*	Study loan with an institution other than a bank	1	2	-8	-9	*dtstuo_b*
G17 *dtcre*	Credit card	1	2	-8	-9	*dtcre_b*

G18 *dtstr*	Store card (For example, Edgars, Foschini or Woolworths store card)	1	2	-8	-9	*dtstr_b*
G19 *dthp*	Hire purchase agreement	1	2	-8	-9	*dthp_b*
G20 *dtfilloan*	Loan from a family member	1	2	-8	-9	*dtfilloan_b*
G21 *dtfrloan*	Loans from friends	1	2	-8	-9	*dtfrloanbal*
G22 *dtmsh*	Loan with a Mashonisa/informal money lender	1	2	-8	-9	*dtmsh_b*
G23 *dtemploan*	Loans from an employer	1	2	-8	-9	*dtemploan_b*
G24 *dtunpdtax*	Unpaid tax including PAYE, property taxes and VAT if a personal debt	1	2	-8	-9	*dtunpdtax_b*
G25 *dtserarr*	Arrears in service and other monthly bills	1	2	-8	-9	*dtserarr_b*
G25.1 *dtoth1*	Other debts (Specify) *dtoth1_o*	1	2	-8	-9	*dtoth1_b*
G25.2 *dtoth2*	Other debts (Specify) *dtoth2_o*	1	2	-8	-9	*dtoth2_b*

INTERVIEWER READ OUT: Now we would like to ask about certain financial assets you may have.					
					Skip
G26.1 *aslifeins*	Do you personally have **Life insurance**		Yes	1	
			No	2	
			Don't know	-8	
			Refused	-9	
G27.1 *aspen*	Do you personally have a **Pension or retirement annuity**?		Yes	1	
			No	2	G28.1
			Don't know	-8	G28.1
			Refused	-9	G28.1
G27.2 *aspen_v*	At present what is the cash or current cash in value of your **Pension or retirement annuity**?		Amount	R	G28.1
			Don't know	-8	
			Refused	-9	
G27.3 *aspen _brac#*	At present what is the cash or current cash in value of your **Pension or retirement annuity**? Would you say the amount is				
	G27.3.1	More than or less than R50,000?	More than	1	
			About equal to	2	G28.1
			Less than	3	G27.3.4
			Refused	-8	G28.1
			Don't know	-9	G28.1
	G27.3.2	More than or less than R500,000?	More than	1	
			About equal to	2	G28.1
			Less than	3	G28.1
			Refused	-8	G28.1
			Don't know	-9	G28.1
	G27.3.3	More than or less than R1,000,000?	More than	1	G27.3.6
			About equal to	2	G28.1
			Less than	3	G28.1
			Refused	-8	G28.1
			Don't know	-9	G28.1
	G27.3.4	More than or less than R5,000?	More than	1	G28.1
			About equal to	2	G28.1
			Less than	3	
			Refused	-8	G28.1
			Don't know	-9	G28.1
	G27.3.5	More than or less than R500?	More than	1	
			About equal to	2	
			Less than	3	G28.1
			Refused	-8	
			Don't know	-9	
	G27.3.6	More than or less than R5,000,000?	More than	1	
			About equal to	2	
			Less than	3	
			Refused	-8	
			Don't know	-9	
G28.1 *asfin*	Do you personally have **Unit trusts, stocks and shares**?		Yes	1	
			No	2	G29.1
			Don't know	-8	G29.1
			Refused	-9	G29.1
G28.2 *asfin_v*	At present what is the cash or current cash in value of your **Unit trusts, stocks and shares**?		Amount	R	G29.1
			Don't know	-8	
			Refused	-9	

					Skip
G28.3 *asfin _brac#*	At present what is the cash or current cash in value of your **Unit trusts, stocks and shares**? Would you say the amount is				
	G28.3.1 finstksval_brac1	More than or less than R50,000?	More than	1	
			About equal to	2	G29.1
			Less than	3	G28.3.4
			Refused	-8	G29.1
			Don't know	-9	G29.1
	G28.3.2	More than or less than R500,000?	More than	1	
			About equal to	2	G29.1
			Less than	3	G29.1
			Refused	-8	G29.1
			Don't know	-9	G29.1
	G28.3.3	More than or less than R1,000,000?	More than	1	G28.3.6
			About equal to	2	G29.1
			Less than	3	G29.1
			Refused	-8	G29.1
			Don't know	-9	G29.1
	G28.3.4	More than or less than R5,000?	More than	1	G29.1
			About equal to	2	G29.1
			Less than	3	
			Refused	-8	G29.1
			Don't know	-9	G29.1
	G28.3.5	More than or less than R500?	More than	1	
			About equal to	2	
			Less than	3	G29.1
			Refused	-8	
			Don't know	-9	
	G28.3.6	More than or less than R5,000,000?	More than	1	
			About equal to	2	
			Less than	3	
			Refused	-8	
			Don't know	-9	
G29.1 *dtstvl*	Do you belong to a **Stokvel or Savings Club**?		Yes	1	
			No	2	
			Don't know	-8	
			Refused	-9	
G30.1 *asacc*	Do you personally have a **bank account**?		Yes	1	
			No	2	G31
			Don't know	-8	G31
			Refused	-9	G31
G30.2 *asacc_v*	At present what is the balance of your **bank account**?		Amount	R	G31
			Don't know	-8	
			Refused	-9	
G30.3 *asacc_brac#*	Thinking about your **bank account** balance would you say the amount is				
	G30.3.1	More than or less than R0?	More than	1	
			About equal to	2	G31
			Less than	3	G30.4
			Refused	-8	G31
			Don't know	-9	G31
	G30.3.2	More than or less than R500?	More than	1	
			About equal to	2	G31
			Less than	3	G31
			Refused	-8	G31
			Don't know	-9	G31
	G30.3.3	More than or less than R5,000?	More than	1	
			About equal to	2	G31
			Less than	3	G31
			Refused	-8	G31
			Don't know	-9	G31
	G30.3.4	More than or less than R50,000?	More than	1	
			About equal to	2	G31
			Less than	3	G31
			Refused	-8	G31
			Don't know	-9	G31
	G30.3.5	More than or less than R100,000?	More than	1	
			About equal to	2	
			Less than	3	G31
			Refused	-8	
			Don't know	-9	

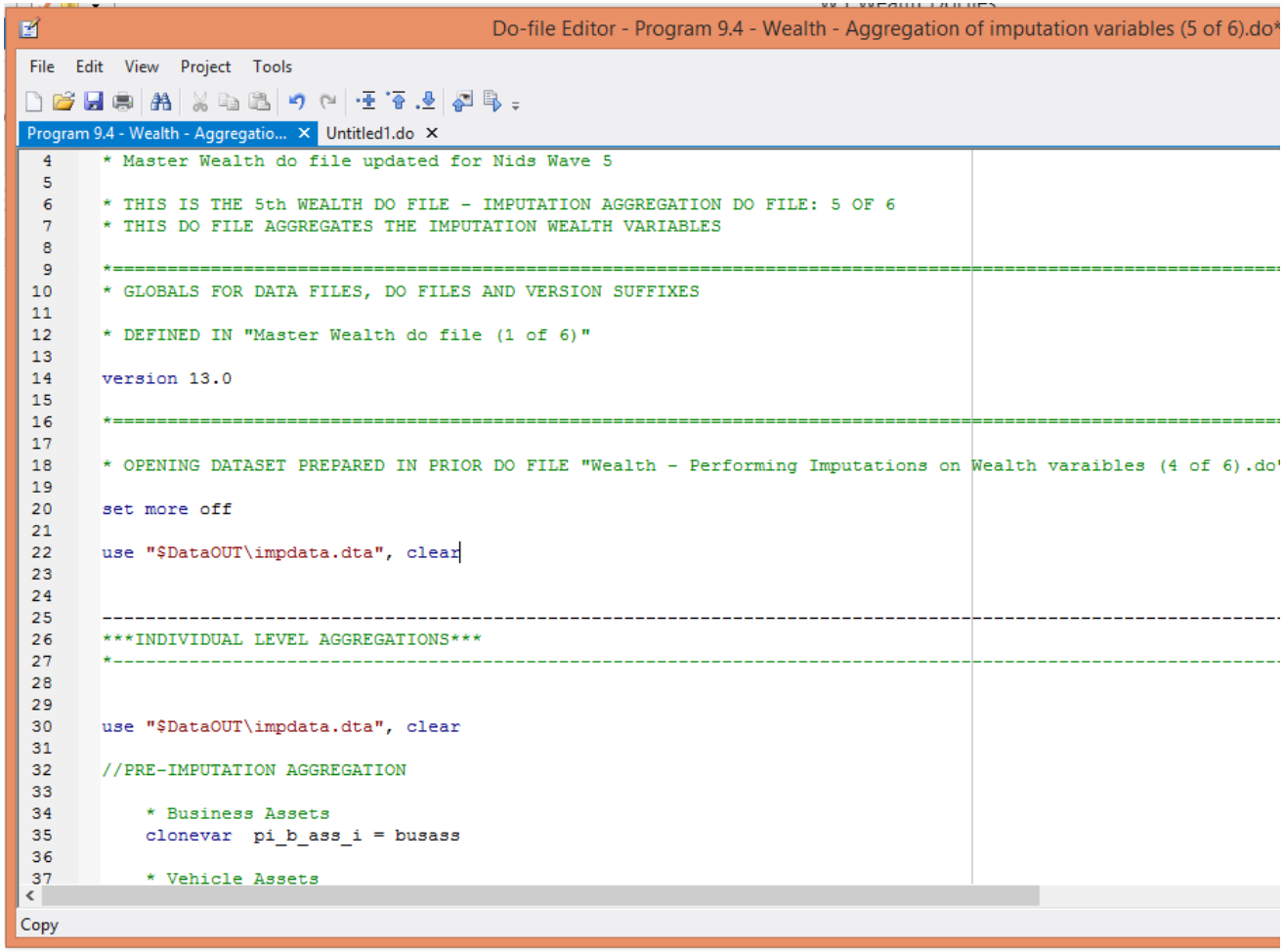
					Skip
G30.4 *dtacc_brac#*	G30.4.1	More than or less than R500 in overdraft?	More than	1	
			About equal to	2	G31
			Less than	3	G31
			Refused	-8	G31
			Don't know	-9	G31
	G30.4.2	More than or less than R5,000 in overdraft?	More than	1	
			About equal to	2	G31
			Less than	3	G31
			Refused	-8	G31
			Don't know	-9	G31
	G30.4.3	More than or less than R50,000 in overdraft?	More than	1	
			About equal to	2	G31
			Less than	3	G31
			Refused	-8	G31
			Don't know	-9	G31
	G30.4.4	More than or less than R100,000?	More than	1	
			About equal to	2	G31
			Less than	3	G31
			Refused	-8	G31
			Don't know	-9	G31
G31 *assell*	Suppose you were to sell off your share of the major household possessions (including your home), turn all of your investments into cash and pay all your debts – would you have something left over, breakeven or be in debt?		Something left over	1	
			Breakeven	2	G36
			In debt	3	G34
			Refused	-8	G36
			Don't know	-9	G36
G32 *assell_v*	How much would you have left over?		Amount	R	G36
			Refused	-8	
			Don't know	-9	
G33 *assell_brac#*	Would you say the amount left over would be:				
	G33.1	More than or less than R25,000?	More than	1	G33.3
			About equal to	2	G36
			Less than	3	
			Refused	-8	G36
			Don't know	-9	G36
	G33.2	More than or less than R10,000?	More than	1	G36
			About equal to	2	G36
			Less than	3	G33.4
			Refused	-8	G36
			Don't know	-9	G36
	G33.3	More than or less than R50,000?	More than	1	G33.5
			About equal to	2	G36
			Less than	3	G36
			Refused	-8	G36
			Don't know	-9	G36
	G33.4	More than or less than R5,000?	More than	1	
			About equal to	2	
			Less than	3	G36
			Refused	-8	
			Don't know	-9	
	G33.5	More than or less than R100,000?	More than	1	
			About equal to	2	G36
			Less than	3	G36
			Refused	-8	G36
			Don't know	-9	G36
	G33.6	More than or less than R1,000,000?	More than	1	
			About equal to	2	
			Less than	3	G36
			Refused	-8	
			Don't know	-9	
G34 *dtsell_v*	How much would your debts amount to?		Amount	R	G36
			Refused	-8	
			Don't know	-9	

					Skip
G35 *dtsell_brac#*	Would you say the amount of debt would be:				
	G35.1	More than or less than R25,000?	More than	1	G35.3
			About equal to	2	G36
			Less than	3	
			Refused	-8	G36
			Don't know	-9	G36
	G35.2	More than or less than R10,000?	More than	1	G36
			About equal to	2	G36
			Less than	3	G35.4
			Refused	-8	G36
			Don't know	-9	G36
	G35.3	More than or less than R50,000?	More than	1	G35.5
			About equal to	2	G36
			Less than	3	G36
			Refused	-8	G36
			Don't know	-9	G36
	G35.4	More than or less than R5,000?	More than	1	
			About equal to	2	
			Less than	3	G36
			Refused	-8	
			Don't know	-9	
	G35.5	More than or less than R100,000?	More than	1	
			About equal to	2	G36
			Less than	3	G36
			Refused	-8	G36
			Don't know	-9	G36
	G35.6	More than or less than R1,000,000?	More than	1	
			About equal to	2	
			Less than	3	
			Refused	-8	
			Don't know	-9	
G36 *hgsell_a*	Think about everything inside your house. Suppose you were to sell off your share of everything, excluding any vehicles and the house itself, what would you get for it?		Amount		R1
			Refused	-8	
			Don't know	-9	
G37 *hgsell_brac#*	Would you say the amount you would get would be				
	G37.1	More than or less than R25,000?	More than	1	G37.3
			About equal to	2	R1
			Less than	3	
			Refused	-8	R1
			Don't know	-9	R1
	G37.2	More than or less than R10,000?	More than	1	R1
			About equal to	2	R1
			Less than	3	G37.4
			Refused	-8	R1
			Don't know	-9	R1
	G37.3	More than or less than R50,000?	More than	1	G37.5
			About equal to	2	R1
			Less than	3	R1
			Refused	-8	R1
			Don't know	-9	R1
	G37.4	More than or less than R5,000?	More than	1	
			About equal to	2	
			Less than	3	R1
			Refused	-8	
			Don't know	-9	
	G37.5	More than or less than R100,000?	More than	1	
			About equal to	2	R1
			Less than	3	R1
			Refused	-8	R1
			Don't know	-9	R1
	G37.6	More than or less than R1,000,000?	More than	1	
			About equal to	2	
			Less than	3	
			Refused	-8	
			Don't know	-9	

2. APPENDIX B: Screenshot of Sample Data

	Gender	Race	Year	Districts	Total_Assets	Total_Liab~s	Net_worthy	Business_A~s
1	Female	African	2010/11	Alfred Nzo District Municipality	8294	288	224	71
2	Female	African	2010/11	Amajuba District Municipality	3322	316	185	79
3	Female	African	2010/11	Amatole District Municipality	2764	226	197	67
4	Female	African	2010/11	Bohlabela District Municipality	2861	317	107	59
5	Female	African	2010/11	Bojanala District Municipality	3270	282	216	71
6	Male	African	2010/11	Boland District Municipality	3147	267	213	89
7	Female	African	2010/11	Bophirima District Municipality	3144	282	195	80
8	Female	African	2010/11	Cacadu District Municipality	3069	261	207	74
9	Male	African	2010/11	Capricorn District Municipality	2859	297	130	49
10	Female	African	2010/11	Central District Municipality	3282	258	183	62
11	Female	African	2010/11	Central Karoo District Municipality	3127	241	183	77
12	Male	African	2010/11	Chris Hani District Municipality	3819	265	261	74
13	Female	African	2010/11	City Of Cape Town Metropolitan Municipality	3220	248	191	80
14	Female	African	2010/11	City Of Johannesburg Metropolitan Municipality	3365	221	250	100
15	Female	African	2010/11	City Of Tshwane Metropolitan Municipality	3472	248	229	95
16	Female	African	2010/11	Eden District Municipality	2340	276	240	79
17	Male	African	2010/11	Ehlanzeni District Municipality	1829	265	126	54
18	Male	African	2010/11	Ekurhuleni Metropolitan Municipality	1952	244	183	75
19	Female	African	2010/11	Ethekwini Municipality	2004	248	191	67
20	Female	African	2010/11	Frances Baard District Municipality	2298	266	242	105
21	Male	African	2010/11	Govan Mbeki Municipality	1901	261	149	69
22	Female	African	2010/11	Ilembe District Municipality	2279	267	236	76
23	Female	African	2010/11	Karoo District Municipality	2225	253	240	81
24	Female	African	2010/11	Kgalagadi District Municipality	2117	285	173	72
25	Male	African	2010/11	Lejweleputswa District Municipality	2107	311	138	56
26	Female	African	2010/11	Metsweding District Municipality	2252	292	198	86

3. APPENDIX C: Snapshot of electronic codebook/do file



4. APPENDIX D: Consistency matrix

Ascertain the relationship between wealth inequality and entrepreneurial activity in South Africa. Establish the nature of this relationship for individuals at the top of the wealth distribution (wealthy individuals) in contrast to those at the bottom (poor individuals) of the wealth distribution.					
Sub-problem	**Literature Review**	**Hypothesis**	**Source of data**	**Type of data**	**Analysis**
Ascertain the aggregate relationship between wealth inequality and entrepreneurial activity in South Africa.	(Jung, Seo, & Jung, 2018); Sarkar et al. (2018); (Herrington et al., 2017); Xavier-Oliveira at al., (2015)	$\mathbf{H_3}$: There is a negative relationship between wealth inequality and entrepreneurial activity (self-employment/employer) such that as wealth inequality increases entrepreneurial activity decreases in South Africa.	NIDS Data: • Section E: Labour Market Participation • Section G: Personal ownership and debt	IV: Continuous DV: Categorical (Binary)	Fixed Effects Panel Model.

Ascertain the relationship between wealth inequality and entrepreneurial activity in South Africa. Establish the nature of this relationship for individuals at the top of the wealth distribution (wealthy individuals) in contrast to those at the bottom (poor individuals) of the wealth distribution.					
Sub-problem	**Literature Review**	**Hypothesis**	**Source of data**	**Type of data**	**Analysis**
Examine the relationship between wealth inequality and entrepreneurial activity for individuals at the top of the wealth distribution.	(Packard & Bylund, 2017); Sarkar et al. (2018); Lecuna, 2014 Xavier-Oliveira at al., (2015)	$\mathbf{H_1}$: There is a positive relationship between wealth inequality and entrepreneurial activity for individuals at the top end of the wealth distribution such that as wealth inequality increases entrepreneurial activity increases for these individuals.	NIDS Data: • Section E: Labour Market Participation • Section G: Personal ownership and debt	IV: Continuous DV: Categorical (Binary)	Fixed Effects Panel Model.

Ascertain the relationship between wealth inequality and entrepreneurial activity in South Africa. Establish the nature of this relationship for individuals at the top of the wealth distribution (wealthy individuals) in contrast to those at the bottom (poor individuals) of the wealth distribution.					
Sub-problem	**Literature Review**	**Hypothesis**	**Source of data**	**Type of data**	**Analysis**
Examine the relationship between wealth inequality and entrepreneurial activity for individuals at the bottom of the wealth distribution.	(Sarkar et al., 2018); Jung, Seo, & Jung (2018)	$\mathbf{H_2}$: There is a negative relationship between wealth inequality and entrepreneurial activity for individuals at the bottom end of the wealth distribution such that as wealth inequality increases entrepreneurial activity decreases for these individuals.	NIDS Data: • Section E: Labour Market Participation • Section G: Personal ownership and debt	IV: Continuous DV: Categorical (Binary)	Fixed Effects Panel Model.

Ascertain the relationship between wealth inequality and entrepreneurial activity in South Africa. Establish the nature of this relationship for individuals at the top of the wealth distribution (wealthy individuals) in contrast to those at the bottom (poor individuals) of the wealth distribution.					
Sub-problem	**Literature Review**	**Hypothesis**	**Source of data**	**Type of data**	**Analysis**
Examine the relationship between wealth inequality and casual labouring as an alternative to entrepreneurial activity for those at the bottom of the wealth distribution.	(Bigsten, 2018); (Sarkar et al., 2018);	$\mathbf{H_4}$: There is a positive relationship between wealth inequality and increased casual labouring in South Africa such that as wealth inequality increases casual labour increases in South Africa.	NIDS Data: • Section E: Labour Market Participation • Section G: Personal ownership and debt	IV: Continuous DV: Categorical (Binary)	Fixed Effects Panel Model.