An empirical investigation into the gendered informality and job search in the South African labour market

by

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Declaration

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Abstract

The dissertation sets out to understand the ways in which gender inequality is maintained when women are disadvantaged in terms of access to better informal sector jobs, benefits from economic recovery and active job search. I present evidence of a heterogeneous informal sector in which substantial part provides jobs for people who need employment to meet basic household needs in the absence of alternative sources of income. Within the informal sector, a smaller portion of more desirable jobs in growth-oriented enterprises exists, but accessing those jobs requires overcoming financial and human capital barriers. Furthermore, heterogeneity within the informal sector is gendered, meaning that most jobs in the survivalist tier are carried out by women, while many of the jobs in growth-oriented microenterprises are carried out by men.

The study also investigates the gender divergence in informal sector employment that emerged at the end of the financial crisis. As the economy recovered from the global financial crisis, the growth of male informal sector employment outpaced that of female informal sector employment. I investigate the mechanisms behind this divergence and find that this is partly due to men benefitting from working in informal sector industries with a higher employment elasticity. I developed a novel decomposition technique that can identify the importance of an initial gender imbalance and industry-specific employment elasticities in driving gender differences in the cyclicality of informal sector employment. Finally, the chapter also identifies the importance of social norms and household factors that preclude vulnerable women from reaping the benefits of economic growth.

Lastly, I use the novel time use survey to study the constraints on job search. Diary entries from the dataset revealed that some respondents who self-identify as discouraged job seekers engage in active job search. The analysis reveals just how infrequent active job search is in the South

African labour market. This is especially concerning given the problem of large-scale and open unemployment. Despite the low frequency of search, the data show that active job search tends to be intensive, with job seekers spending long periods of time looking for work. Again, household characteristics were confirmed to be closely linked to the behaviour of women in the labour market. The unemployed who came from households with lower levels of income were more likely to participate in and allocate more time towards active search.

This dissertation draws attention to a proportion of people who are trying, despite the odds, to actively search for work while they cope with conditions of poverty and unemployment. It also contributes to the literature that seeks to understand why most of these searchers are unsuccessful in their endeavours, and why so few find employment in the informal sector. Women are most disadvantaged in the labour market. They have less access to the growth-oriented tier in the informal sector, are less likely to work in informal sector industries that are more responsive to upswings and are subject to social norms that restrict their ability to search for employment.

isiShwankathelo

Bambalwa abantu abaphangela kwicandelo elingamiselwanga eMzantsi Afrika nangona izinga lentswela-ngqesho liphezulu. Uphando lwethu lukhangela iinkhuthazo kunye neengxaki abafuni-msebenzi abajamelane nazo; ukuquka abafumene umsebenzi kwicandelo elingamiselwanga. Kwisifundo sokuqala sisebenzisa ubuchule beenkcukacha-manani kuze siqokelele abasebenzi ku manqanaba amabini kwicandelo elingamiselwanga (abizwa amashishini okuzisindisa nala anempumelelo). Emva koko siqikelela iimeko ezahlukileyo ezibangela ukuba abafuni-ngqesho baphelele kumashishini okuzisindisa okanye amashishini anempumelelo kwaye siqinisekisa ukuba silungisa uxanduva lweempawu ezingabonakaliyo zabasebenzi kwiingqikelelo zethu. Uhlalutyo lwethu lusibonisa ukuba abantu abangena kumashishini anempumelelo banalo ithuba lokufikeleka kwinkunzi (yokuqala ishishini) kwaye benemfundo namava okubanceda bangohlulwa iimbophelelo zempangelo. Xa ingekho imali, kwaye izinga lemfundo namava ephantsi kuba nzima ukoyisa izithintelo zokufumana umsebenzi kubafuni-ngqesho. Lo nto ibangela ukuba kubekho abafuni-ngqesho abancamele kumashishini okuzisindisa ngenxa yokunqongophala komthombo womvuzo.

Kwisifundo sesibini, siphande ukonyuka kokungalingani ngokwesini kwicandelo elingamiselwanga emva kwexesha lobunzima kwezoqoqosho. Zithe zakuba ngcono iimeko zoqoqosho eMzantsi Afrika, kwenyuka ukuqeshwa kwamadoda kwicandelo elingamiselwanga kudlula ukwenyuka kwengqesho kumabhinqa kweli candelo. Sivavanye izizathu zokungalingani ngokwesini kwingqesho kwicandelo elingamiselwanga ngokwandisa ubuchule bentlukaniso. Obu buchule busivumela ukuba sikwazi ukucacisa ukungalingani ngokwesini kwizinga loshishino kwaye sikwazi ukwahlukanisa ukwabiwa kwesini kulungelaniso-ngqesho kumashishini. Sakube siphamndile sifumanise ukuba amashishini anesabelo esiphantsi samabhinqa, afana nokwakha enza kakuhle kumalungiselelo-ngqesho. Lo nto ithetha ukuba imisebenzi eyongezelwe amabhinqa kwicandelo elingamiselwanga beluluncinane (koba

ngcono umnotho – ngokuba kubangcono kwezezimali) ngenxa yokuba amabhinqa ebembalwa kula mashishini kakade. Kukho namanye amashishini (njengeevenkile) anesabelo esingcono samabhinqa kodwa ulungelaniso-ngqesho lwamadoda kula mashishini luphezulu ludlula elamabhinqa. Emva kophando olungakumbi, sifumanise ukuba amalungu ekhaya nentlalo yoluntu achaza ukungalingani ngokwesini ngcono kunemfundo namava okusebenza.

Kwisifundo sesithathu, sihlola ukuba intsebenziso yexesha inesandla na ekungalingani ngokwesini xa sithetha ngoku thatha inxaxheba wokufuna umsebenzi. Oku kungalingani ngokwesini kubafuni-ngqesho kufuna ukucaciswa ukodlula olu hlobo lundlela-mbini esiqhele ukucinga ngalo lokuthatha inxaxheba kwimarike yabasebenzi. Ngoko ke, sincedwe kukusebenzisa iinkcukacha ezifakwe kwiidayari zabemi baseMzantsi Afrika. Ezi nkcukacha zisinceda ekuboneni ukuba abangaqeshwanga bathatha inxaxheba ekukhangeleni umsebenzi kangaphi na. Sifumanisa ukuba nabafuni- ngqesho abangenathemba bayayithatha inxaxheba ekukhangeleni imisebenzi. Esi siphumo someleza ingxoxo yokusebenzisa inkcazelo ebanzi yentswela-ngqesho. Sifunda nangeendlela amabhinqa achaphazelekayo ngenxa yamandla, amakhaya, nentlalo yoluntu kubuninzi bokwenzeka nobude bokukhangela umsebenzi. Ubukhulu becala kumabhinqa, ulwabiwo olusezantsi lwexesha elibekelwe ekukhangeleni umsebenzi lubangelwa bubunzima bokucwangcisa ixesha phakathi kweemfanelo zekhaya nezemarike. Amabhinqa afumana amathuba amafutshane okuthatha inxaxheba ekukhangeleni impangelo ngenxa yokuxakekiswa ngumsebenzi wasendlini. Olu phando lusifundisa ukuba intlalo yolunto echaphazela isini ngokwahlukeneyo iyakwazi ukudibana nohlobo lomsebenzi, oko kudale amathuba angalinganiyo kwezona ndawo ezibuthathaka kwimarike yabasebenzi.

Dedication

I dedicate this dissertation to Nomonde Makaluza. You've been a steady guiding light in my life. I wish you were here to see the fruits of your labour.

Miya Ma.

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I'd like to thank Prof RP Burger for your patience and your mentorship. It has been an incredible journey and an honour to have you as my supervisor. I'd also like to thank my siblings Qiniso and Luleka Makaluza. Thank you for the unconditional support. Gcwanini. I thank Prof Van der Berg for starting me on this path of Development Economics and for being a constant guide.

To my friends and family, ndiyabulela.

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1. Introduction

1.1. Motivation for this dissertation

Young black women are among some of the most vulnerable groups of people in South Africa. Unfortunately, the pace of social change since political transition has been such that those demographic attributes continue to describe the lower end of any socio-economic distribution, be it earnings, health, education or wealth. In the labour market, markers of vulnerability include being unemployed and having precarious forms of employment such as working in the informal sector. In this dissertation, I will focus the attention on some of the endeavours of informal sector workers and unemployed people to either cope with or transition out of poverty. I will also highlight the extent of gender inequality by analysing the labour market through a gendered lens.

In South Africa, women have increasingly taken on the burden of unemployment and precarious work since the feminisation of the labour force, which occurred shortly after the democratic transition. This feminisation took place in part because of the changing structure of households, in that fewer women got married and the unemployment rate among men increased (Casale 2004). The fact that some men were no longer able to provide an income to their households, led to women being pushed into the labour market to try to provide for their families (Casale and Posel 2002). For these women, entry into the labour market was not a result of factors that pulled them towards reaching their earnings potential; instead they entered a labour market in which they often could not access stable jobs and decent earnings. As a result, many women became unemployed and some found ways of earning low and unstable income from precarious work.

In South Africa, informal employment is an important source of precarious work. This type of employment includes domestic work, formal sector employment without protection by labour

legislation or organised labour, and informal sector work (Hussmanns 2004). The informal sector and domestic work have historically been particularly large employers of women. The informal sector includes own-account workers and wage employees who perform their duties in small firms (with fewer than five workers) that are not registered for VAT and do not pay income tax for their workers. Firms in this sector operate at the lower end of the economic distribution.

In the early literature on the informal sector, this sector was conceptualised as a homogenous mass of workers who could not find employment in the formal sector. One prominent example of this literature is Hart (1973), who coined the term after observing workers in Ghana who operated outside of the standard forms of economic activity. The theoretical basis for this early literature was established by Harris and Todaro (1970), whose two-sector model that could be used to explain persistent unemployment despite the existence of an easy-entry sector where people could find employment. The Harris and Todaro model provided an explanation for labour market segmentation and, by extension, the existence of the informal sector.

As more research into this sector was conducted, it became clear that the informal sector was not a homogeneous entity meant to absorb all workers who could not be found in the formal sector (Fields 2009). Parts of the informal sector constitute workers who could not find employment in the formal sector and who had to find ways of coping with their poverty. Those workers found themselves working for survivalist enterprises. The informal sector also provided a starting point for growth-oriented enterprises to pursue opportunities in a less regulated part of the economy. Survivalist and growth-oriented enterprises have different physical and human capital requirements and fulfil different employment needs. Survivalist firms effectively act as employers of last resort and are these jobs are relatively easy to find, albeit not very desirable for anyone but the most desperate job-seekers. Growth-oriented

enterprises, on the other hand, provide alternative income opportunities to workers who may otherwise work in the formal sector, but pose some barriers to entry.

Having established the theoretical basis for heterogeneity amongst informal sector enterprises, the next step was to identify empirically the workers and jobs that belonged to either tier. However, this turned out to be more challenging. Attempts in this regard have mostly relied on splitting informal sector workers based on a single identifier variable, and often at a threshold or thresholds chosen at the discretion of the researcher. For example, Grimm, Knorringa and Lay (2012) found three types of informal sector workers in West Africa. Two of these groups resemble the descriptions of survivalist and growth-oriented tiers, whereas the third group contained enterprises that operated in the survivalist tier but had the potential to move to the growth-oriented tier. Although this analysis provides an interesting description of the different groups within the informal sector, the classification of workers was based on the researchers' somewhat arbitrary cut-off points in the profits that businesses generated. Günther and Launov (2012) used a finite mixture model to find survivalist and growth enterprises by revealing the bimodal distribution of earnings within the informal sector. Although this method relies on data – as opposed to researcher discretion – to create the earnings threshold between tiers, it still depends on a single measure to classify individuals who work in a complex sector. The issue of segmentation within the informal sector, and the process that determines entry into each of these sectors, is investigated in Chapter 2 of this dissertation.

Studying intertemporal changes in total informal sector employment can help researchers understand why South Africa has high and open unemployment. Perhaps the best place to start searching for answers is by asking whether the South African informal sector can adequately function as an absorber of excess labour. Conventional wisdom says that a key function of the informal sector is to provide work for those who could not find work in the formal sector, thereby shielding the labour force from unemployment. A corollary of this thinking is that the

informal sector will provide work in times when the economy is shrinking and formal-sector employment declines. In this case informal sector employment will be countercyclical.

However, it is also possible for informal sector employment to be procyclical. Fiess, Fugazza and Maloney (2010) shows that informal sector employment in Latin American countries can sometimes behave in a procyclical manner when the market is integrated with the formal sector. In such cases the informal sector will suffer when the economy enters a recession. Conversely, the informal sector enters the recovery period with the formal sector. This is relevant for South African, since significant forward and backward linkages from the informal to the formal sector has been documented (Valodia, Lebani and Skinner 2005; Philip 2010). This is because most of the South African informal sector is dependent on the goods produced by the formal sector. Chapter 3 examines the cyclicality of the South African informal sector. It attempts to explain why male and female informal sector employment responded differently to the economic recovery following the financial crisis.

Several empirical studies have looked at gender inequality in the South African labour force, employment and earnings, but there has been comparatively little effort to understand gender differences in the intensity of job search. Existing studies tend to focus on the binary participation decision, rather than the total time spend searching or when this search occurs. Job search theory suggests that time invested in job search is indicative of the expected cost and benefit of search, but neglects to account for the obstacles that inhibit women from fully participating in job search. If household obligations preclude women from searching for work for prolonged periods of time, or during the most beneficial times of the day, then this is an important disadvantage that could help explained gendered labour market outcomes.

1.2. Structure of this dissertation

The substantive part of this dissertation starts with Chapter 2, which contributes to the literature of identifying workers in the survivalist and growth-orientated informal sector tiers. It addresses the two main shortcomings of the existing literature: using a single metric to classify workers, and setting an arbitrary, researcher-defined threshold. In my research, I use an unsupervised machine learning technique to sort through the jobs in the informal sector based on a variety of individual and job attributes with minimal input from the researcher. I chose the k-median clustering technique, which finds the natural groupings in the data by using multiple variables (Johnson and Wichern 2007). The results of this algorithm were used in conjunction with theories of the segmentation in the informal sector and descriptions of the two tiers from the literature to identify the types of workers that have sorted themselves into the survivalist and the growth-oriented tiers.

After having established the jobs in either tier, I describe the characteristics of people who work in survivalist and growth-oriented enterprises. These characteristics were important for the final step in the chapter, where I predicted the tier in which jobless people were most likely to be employed within the next six months. These predictions were made from a gendered perspective so as to better understand the inequalities that may be present in the informal sector. The analysis shows that most informal sector workers are in survivalist enterprises. Entering growth-oriented enterprises requires a higher level of education and is usually associated with living in smaller households. The responsibility to provide for children draws people out of unemployment and into the informal sector. The gendered nature of employment within the informal sector is confirmed by the fact women are underrepresented in growth-oriented enterprises and overrepresented in survivalist firms. Furthermore, the effect of household attributes on informal sector entry is different for women and men: women who reside in households with more children tend to enter survivalist enterprises while men enter growth-

oriented enterprises. The analysis also finds an important role for human capital and other household factors.

In Chapter 3, the dissertation investigates total informal sector employment during the global financial crisis and the post-crisis period. I show evidence that the South African informal sector moves in a procyclical manner. When the effects of the financial crisis started to affect the gross domestic product (GDP), informal sector employment started to decline even before the effects were seen in the formal sector. As the economy recovered, so too did total informal sector employment.

In the post-crisis period, an interesting phenomenon started to emerge in total informal sector employment. Total male informal sector employment grew at a faster pace than total female informal sector employment. This created a gender divergence within the sector (Rogan and Skinner 2018). In Chapter 3 I propose three hypotheses to explain this divergence: 1) men tend to work in informal sector industries that have a higher employment elasticity, 2) gendered human capital constraints have precluded women from entering the expanding part of the informal sector, and 3) household factors and societal norms have constrained female informal employment growth.

The first hypothesis to explain the gender divergence pertains to the different employment elasticities of various industries and how the gender distribution in those industries may disadvantage women. Male-dominated industries in the informal sector may have higher employment elasticities, so that male informal employment would have increased more rapidly during the economic recovery. This proposition could be likened to analysing the gender divergence from the enterprise or jobs perspective. Key to testing this hypothesis was finding the industry contribution to the gender gap in informal sector employment. I develop a novel decomposition technique that measures the part of the increase in the gender informal

employment gap that is due to an initial male employment gap and a higher employment elasticity, and the part that remains unexplained. I then combined the knowledge gained from analysing the industry's gender distribution, elasticity and contribution to the gender gap to identify the industries that played leading roles in the divergence.

The second hypothesis is based on the result from Chapter 2 that higher levels of education increase the likelihood of employment in growth-oriented enterprises. Men were more likely to enter growth-oriented enterprises and barriers exist that prevented women from entering this portion of the informal sector. In contrast, it was easier for women to enter the survivalist segment. Improvements in educational attainment for women may have deterred women from working in the survivalist tier but those improvements were not sufficient to help them overcome the barriers in the growth-oriented tier.

The third hypothesis states that household characteristics and social norms determine the probability of informal sector employment for men and women. The gendered distribution of duties within the household has an important impact on an individual's labour market performance. The number of children in the household is known to affect the probability of employment, but the direction of this effect differs by gender. Furthermore, financial safety nets in the form of state-funded grants have been shown to improve household members' well-being and alleviate the push factors that move people towards precarious forms of employment. Poor households have gained more access to social grants in the post-financial crisis period. The eligibility ages for child support grants and old-age pensions were amended in the period spanning 2008 to 2011. In 2008, the eligibility age for child support grants was 14 years, which increased in increments to 18 years by 2011. This meant that more children in the household could qualify to receive such grants and women were under less pressure to enter the informal sector, which in most cases entailed working in survivalist enterprises. Another change in eligibility took place with the gender equalisation of old-age pension to 60 years (down from

65 years for men). This grant has the highest rand value pay-out of all the grants, and consequently households with elderly men suddenly experienced an increase in funds five years earlier than before. These changes in the social security system could have had an asymmetric effect on labour market outcomes for women. I test whether the effects of household structure and finances on informal sector employment are in line with the third hypothesis.

The three hypotheses proposed in Chapter 3 provide informative lessons for understanding what seems to be growing gender inequality within the informal sector. The decomposition approach identifies the industries that have contributed most to the gender divergence. The analysis also sheds light on the reasons why women have not been able to enter the informal sector at the same pace as men from a human capital and household perspective.

The analysis in Chapter 3 finds an important role for household factors and social norms in determining women's employment outcomes. This raises the question of whether the same factors and norms are also important in explaining job search. This is the motivation for Chapter 4, which examines gender inequality within patterns of active job search. To this end, I used a time-use survey (TUS) which documented how people spend their day in 30-minute intervals.

The TUS allows the identification of gender-related differences in the probability of engaging in active job search, the time invested in job search, and the scheduling of job search activities. This provides a richer, more nuanced view of a complex set of activities that is often reduced to a binary labour market participation outcome. This analysis uses a variety of econometric techniques to understand the determinants of the decisions of whether to actively search for work, how long to search for work, and when to search for work.

Apart from confirming the importance of gender and household obligations in participation rates, I also find that women engage in shorter periods of active search, and use later time slots for active search than men. Household characteristics are shown to be closely linked to the behaviour of women in active job search. Specifically, female job seekers that take care of dependants in the household are less likely to participate in, and allocate less time to, search than those who do not have care-related responsibilities. Women are also found to be more likely to choose to search in the time slots when there were fewer household obligations to fulfil or when it was safer to be outdoors. This reveals an additional female disadvantage that has hitherto been largely ignored in the empirical job search literature. The analysis in Chapter 4 also contributes to the debate regarding whether the strict or the broad definition of unemployment is more appropriate.

Chapter 5 provides a summary of the analyses in the preceding chapters and concludes with some policy recommendations.

2. Job seeker entry into the two-tiered informal sector

2.1. Introduction

One of the puzzles of the South African labour market is that it has a small informal sector amid high open unemployment. The small numbers of informal sector workers challenge the notion of a free-entry segment that can absorb surplus job seekers. This has encouraged studies on the incentives and constraints that govern the decision to enter this part of the economy. Of course, the informal sector consists of workers who are engaged in a variety of activities. Some are owner-operators of informal enterprises, others are employees in such enterprises. Informal enterprises also exhibit diversity in terms of their size, dynamics and orientation.

The question is whether it is possible to distinguish components of the informal sector that share certain characteristics or types of behaviour, thereby enabling more systematic analysis. For example, in one framework, Fields (1990) distinguished between two subsectors: an easy-entry survivalist (or lower-tier) informal sector and a growth-oriented (upper-tier) informal sector. Fields defines growth-oriented microenterprises as consisting of entrepreneurs who want to take advantage of income opportunities provided by a less regulated sector, whereas survivalists are job seekers who have been unsuccessful in finding employment in the formal sector and who accept low wages and unpleasant working conditions in order to alleviate their poverty.

This chapter contributes to the understanding of the South African informal sector by demonstrating a method to identify, based on objective characteristics, the jobs and employment opportunities typically found in what appears to be two tiers, which I called the growth-oriented and survivalist tiers. While the Fields model did not deal with wage workers in the informal sector, I considered all workers in the sector. I then proceeded to determine

whether job seekers were in any way restricted from joining either informal sector tier due to high entry barriers, or whether individuals voluntarily chose to avoid informal sector jobs.

The two tiers within the informal sector were identified by using a data-driven clustering technique. This approach combines the information about several job characteristics and an automated algorithm to find natural groupings of workers who share very similar work environments, without the need to specify an arbitrary wage cut-off to distinguish between survivalist enterprises and growth-oriented microenterprises. Thereafter, I explored the relationship between (a) individual and household characteristics and (b) the probability of being in either informal sector tier to determine the type of job seekers who were entrants in either tier. This relationship is modelled using multinomial logit, conditional logit, ordinary least squares and fixed effects estimators to address various confounding factors that may otherwise bias my estimates.

Most of the South African informal sector consists of workers in survivalist enterprises who entered the informal sector as an employment opportunity of last resort. They work in harsh working conditions for low pay and with poor prospects for upward mobility. Entry into this segment, for those who were previously jobless, is usually associated with the responsibility of providing for dependent household members and a lack of other sources of household income. A smaller portion of the informal sector consists of growth-oriented microenterprise workers who have the skills and financial means to overcome barriers that prevent entry into this segment. They earn a higher income and do jobs that are closer to those found in the formal sector. In addition, women are less likely to enter growth-oriented microenterprises than men.

The chapter starts by reviewing the relevant international and South African literature on the informal sector (Section 2.2). This is followed by a description of the panel data used in the empirical analysis (Section 2.3). The statistical technique used to sort informal sector workers

into their respective tiers is discussed (Section 2.4) before the results are presented. The empirical analysis (Section 2.5) begins with a description of the two tiers of the informal sector, before analysing the determinants of entering either of these segments. Section 2.6 concludes the discussion of job seeker entry into the two-tiered informal sector.

2.2. Literature review

2.2.1. The South African labour market

Since the political transition in 1994, labour force participation has grown faster than employment. This has resulted in an unemployment rate (narrowly defined) that increased and then stabilised at around 25%, with an additional 10% of the labour force classified as discouraged work seekers. Structural changes in the economy, including skill-biased technical change and shifts towards less labour-intensive sectors, have contributed to the inability of employment growth to keep up with the accelerated growth of the labour force (Bhorat 2004). South Africa also experienced a period of feminisation of the labour force which was driven by supply-side push factors (Casale and Posel 2002). Many of the female entrants either did not find work or engaged in entrepreneurial activities in the informal sector so the increase in female participation was associated with an increase in female unemployment and low-paid employment. Women, black people and the youth have borne the brunt of high and rising unemployment. The majority of the unemployed have never had a job and, of those who have worked, many have experienced unemployment for longer than a year (Banerjee, Galiani, Levinsohn, McLaren and Woolard 2008).

Several elements contribute to the low success rates of job seekers, including the high search costs that are attached to living in areas that are far from business centres. These factors interact with other structural elements in the economy, such as skills inflation, to produce an unemployment rate that is unlikely to change without policy intervention (Banerjee et al. 2008).

Evidence on whether high reservation wages can help account for high South African unemployment is inconclusive. Kingdon and Knight (2004) found self-reported reservation wages much higher than what respondents could expect to receive, but interpret this as evidence that the 'reservation wages' reflect perceived fair wages, rather than evidence that actual reservation wages constrain employment. Rankin and Roberts (2011) found that the youth based their reservation wages on expected earnings from large firms, which could deter them from accepting the lower wages typically offered by smaller firms. On the other hand, Nattrass and Walker (2005) found that the reservation wages of working class Khayelitsha and Mitchells Plain residents are below the wages that they could expect to earn (on average); therefore, low employment is not related to unrealistic reservation wages.

Reservation wages are an essential component for modelling entry of the jobless into the informal sector. In the job search model, reservation wages are a function of non-wage income and alternative job offers. If the wage offers from the informal sector are significantly lower than the job seekers' reservation wages, this could act as a deterrent for entry. In this chapter, I'll use the non-wage income from households to understand how the reservation affects entry into the different tiers of the informal sector.

Since unemployed job seekers cannot depend on their earnings to survive, there must be some form of non-wage income that they can rely on. Non-wage income increases job seekers' ability to sustain themselves during the period of unemployment. In the international literature, unemployment insurance is often used as an important source of non-wage income for the (typically small) group of unemployed job seekers. In South Africa, unemployment insurance is awarded for a limited period when a person is jobless. People may claim unemployment insurance for three months after they lose their job. The unemployment insurance's presence and subsequent absence can be used to measure the effect of non-wage income on search intensity and willingness to accept a job offer. However, using unemployment insurance as the

measure for non-wage income is not suitable in the South African labour market because of the lack of coverage; less than 10% of strictly unemployed people receive the grant (Leibbrandt, Woolard, Finn and Argent 2010). The absence of a grant specifically aimed at assisting the unemployed can necessitate job seekers to use other sources of non-wage income.

Social grants such as the child support grant and the old-age pension are much larger sources of income and have been used as exogenous variation in non-wage income in several economic analyses (Klasen and Woolard 2008; Duflo 2003; Van der Berg, Siebrits and Lekezwa 2010; Van der Berg and Bredenkamp 2002). The impact that these grants have had on members of the household has been positive. For example, Coetzee (2013) found that the recipients of child support grants have better school outcomes than comparable children who do not receive this grant. Old-age pension has been shown to produce favourable welfare outcomes to poor rural households especially when the beneficiary is a woman (Duflo 2003). These grants are an important source of non-wage income for poor South Africans and have also affected how households with the elderly are formed.

One viable strategy to cope with unemployment is to live with someone who receives a stable income (Klasen and Woolard 2008). This constant income could be wages from employed household members, remittances from non-household members, or social grants such as the old-age pension or the child support grant from eligible beneficiaries. Bertrand, Mullianathan and Miller (2003) explored the relationship between the eligibility of a household member for old-age pension and the labour-supply decisions of prime-age adults; they found that employed members tend to decrease their hours worked when an elderly member qualifies for old-age pension. Posel, Fairburn and Lund (2006) extended this research to include the effect of possible labour migration of household members due to the increase in total income. They found that the income from old-age pension helps to relieve the constraints of female labour migration, which could increase labour supply.

The discussion of unemployment extends beyond measures of material well-being to measures of subjective well-being. Kingdon and Knight (2004) found that people who live in households with higher rates of unemployment had lower levels of life satisfaction. Their finding is supported by the studies on subjective well-being that have found that the onset of unemployment lowers the levels of happiness (Clark 2003; Layard 2005; Lucas, Clark, Georgellis and Diener 2004). This suggests that unemployment is involuntary because nobody with the ability to move out of unemployment would choose this unsatisfactory outcome (Kingdon and Knight 2004). Researchers use this result as well as some evidence on the challenges that are faced in the informal sector to conclude that there are barriers that restrict entry into this sector.

South Africa has a history of restrictive laws and practices that made it difficult to work in the informal sector (Kingdon and Knight 2004). Apartheid spatial planning moved marginalised people away from the economic hubs to the outskirts of urban areas (Rogerson 2000). As a result, transport costs have had an important effect on seeking and providing labour. Informal sector enterprises, such as spaza shops (retail outlets) and taverns, have developed within the township economy. These types of traders usually purchase their products from the formal sector and sell them at a mark-up. The goods sold here are more expensive than in the formal sector but the proximity to the consumers encourages sales, which makes the trade a viable employment option.

2.2.2. The informal sector: heterogeneity and segmentation

The informal sector

The predominant view in the early literature was that the informal sector is a single, free-entry sector (Moser 1978; Fields 1990). Having failed to find employment in the formal private or public sector, the job seeker would have the option to move from unemployment to underemployment in the informal sector. The role of the informal sector was not only to provide

employment for residual labour market participants, but also to act as a transition mechanism into the formal sector (Banerjee et al. 2008). Under these assumptions, the size of the informal sector would diminish as a country develops more formal enterprises. This transition did not occur in developing countries as hypothesised. The informal sector grew in developing countries and it became clear that there were barriers that prevented the entry of informal sector workers into the formal public and private sectors. This solidified the application of dual labour market theory as one of the explanations of the existence of this sector.

Dual labour market theory is based on the premise that it is necessary to distinguish between a high-wage primary sector with formal labour regulations and a low-wage secondary sector with informal hiring practices (Reich, Gordon and Edwards 1973; Dickens and Lang 1988). The two segments have different wage structures, and as a result earnings depend on whether the worker is employed in a primary firm (formal sector) or a secondary firm (informal sector). The dual labour market theory has been critiqued as one that creates a false dichotomy between the formal and informal sectors. There are strong backward linkage in the value chain between the formal and informal sectors (Philip 2010) that call the dual labour market theory into question. This critique will be discussed in more detail in Chapter 3.

Wages in the primary segment depend on various institutional factors, such as trade unions or minimum wages, and benefits such as severance pay or health insurance serve to further inflate the remuneration earned in the primary segment. Regulations preclude formal-sector wages from downwardly adjusting to market-clearing levels, which leaves some unemployed workers who are willing to work for wages below what is paid in the formal sector. The informal sector offers jobs without the high wages or job security of formal-sector work. Informal sector workers are therefore more likely to move into and out of labour force participation and unemployment and accept an informal sector wage penalty. This wage penalty remains even

after accounting for (observable and unobservable) human capital differences between workers in these sectors (El Badaoui, Strobl and Walsh 2008).

Heterogeneity within the informal sector

The varied nature of informal sector activities caused some scholars to question the assumption of a homogeneous sector, and to develop models of the informal sector that reflect a mix of underemployed labourers in survivalist enterprises and workers in growth-oriented enterprises (Rogerson 2000; Fields 1990; Lund 1998). I discuss the nature of these two tiers in turn.

Survivalist enterprise workers are usually unable to find stable employment in the formal sector and therefore accept low income and unpleasant working conditions in the informal sector. To cope with poverty, they seek employment with low income and low capital requirements that often offer few prospects of expansion or upward mobility (Rogerson 2000). The relative ease of access in this tier means that there are potentially many entrants, which serves to push down wages.

The environments that survivalist enterprises compete in are congested markets that trade in highly saturated goods and services, for example street vendors selling fruit. One of the consequences of the high competition is that survivalists may find it difficult to upwardly adjust prices in response to increases of costs from their suppliers (Mkhize, Dube and Skinner 2013). A study of street vendors in Durban by Mkhize et al. (2013) found that these persons trade in inadequate business spaces where they are exposed to the elements – which often leads to damaged stock and negative health effects – and usually have poor access to toilets or rubbish removal. These difficulties are exacerbated if trade takes place in an area where a vending permit is required because this can lead to problems with officials. Failure to produce a permit may result in fines or the goods being confiscated. Sometimes the stock is returned damaged or is not returned at all.

Entrepreneurs forced to start businesses out of desperation have high risks of failure (Caliendo and Kritikos 2009). The enterprises started by such entrepreneurs that do not fail generate a small amount of income. Because the survivalist informal sector acts as an employer of last resort, an exit from this sector typically leads to unemployment or inactivity in the labour market. Any profit that is earned by the owners of these enterprises contributes to the provision of their basic needs as well as that of their households. The entrepreneur reinvests insignificant amounts of capital, so the enterprise has little prospect of profit-induced growth (Santarelli and Vivarelli 2006) and can do very little to absorb unemployed job seekers.

Growth-oriented informal microenterprises, on the other hand, can emerge when firms are too small to operate on a large scale. These enterprises operate in markets that have greater physical and human capital requirements than survivalist enterprises, which limits the ease of entry for many unemployed job seekers. These prerequisites limit the ability of unemployed people to start such businesses. Occupations such as those of vehicle mechanics, tailors and builders depend on the availability of workers with industry-specific skills. The income generated from such activities is often comparable to that of formal-sector enterprises (Blunch, Canagarajah and Raju 2001), so growth-oriented microenterprises are much more likely than survivalist enterprises to expand, create employment and offer decent wages and working conditions. Workers in growth-oriented microenterprises can move between the formal and informal sector with more ease than survivalists.

Another framework to distinguish enterprises in the economy uses Kanbur's (2009) framework which is formed from comparing how various enterprises relate to regulation. He makes a distinction between four types of enterprises where:

A. Are subject to regulation and they comply (formal sector enterprises)

B. Are subject to regulation and they do not comply (illegal enterprises)

C. Those that change their activities to avoid regulation (informal sector enterprises)

D. Those that are not subject to regulation (informal sector enterprises)

This framework can also be applied on the survivalist/growth-oriented enterprise distinction within the informal sector. Survivalist enterprises are in category D and growth-oriented enterprises, on the other hand, overlap between categories C and D. Some growth-oriented enterprises are start-ups that will transition into the formal sector and are in category D. Other growth-oriented enterprises operate in the informal sector to avoid regulation and are in category C.

The recognition of heterogeneity within the informal sector provides a more accurate framework for thinking about this sector. For example, attempts to determine whether the informal sector is small because of high entry barriers or reservation wages may be misleading if different incentives and constraints apply to the different informal sector tiers. However, before any empirical analysis of the different tiers can be performed, it is necessary to identify the workers and jobs in different informal sector tiers, which presents a new set of challenges.

Several studies use a specific variable to identify key differences between the firms within the informal sector. For example, Grimm et al. (2012) use accumulated capital in a model that sorts firms into either survivalist (lower-tier) enterprises or growth-oriented (upper-tier) enterprises. In a further refinement, they also distinguish within the former a group of 'constrained gazelles' that, given their observable characteristics, have the potential for high returns but have not reached the upper tier. Günther and Launov (2012) use earnings to differentiate between the survivalist and growth-oriented tiers.

A limitation of focusing on a single factor to categorise subgroups within the informal sector is that it ignores the multidimensional nature of informal sector jobs, including wages, enforcement of regulations and work conditions. Furthermore, choosing a single threshold

value that distinguishes segments is always at least partly arbitrary, and risks making the analysis too dependent on the discretion of the analyst. These issues will be addressed in the empirical analysis in Section 2.5.

I use a data-driven clustering technique that employs various job attributes to identify the survivalist and growth-oriented microenterprises in the informal sector. The k-medians cluster analysis is an exploratory technique that partitions data by maximising similarity within groups and minimising similarity between groups (Johnson and Wichern 2007). The data-driven nature of this method decreases the need for ad hoc assumptions about the number of subgroups and the fraction of informal workers in each subgroup. Results from this technique are used to identify the two tiers in the South African informal sector.

2.3. Data description

Statistics South Africa's Labour Force Survey (LFS) is a rotating panel dataset that was collected biannually from 2000 until 2007. The repeated observations on individuals and households surveyed at six-monthly intervals between September 2001 and March 2004 were used to construct a panel dataset, which is used in the analysis. The LFS panel provides six waves and a rich set of occupational and household attributes, which makes it ideal for investigating the determinants of transitioning into and out of the informal sector.[1]

The LFS was formed by using a two-stage sampling procedure (Statistics South Africa 2001). In the first stage, the 1999 master sample was used to select primary sampling units (PSUs) – with probability proportional to size – from the 1996 census list of enumerator areas (EAs). This master sample, which was stratified into nine provinces each with distinct urban and rural

[1] More recent panel datasets either consist of fewer panel waves or lack earnings data.

areas, did not change throughout the LFS series (Kerr and Wittenberg 2015). In the second stage, ten dwelling units were sampled from each PSU. Each of these households had to complete a module that contained information about the employment status and sector of each working-age adult in the household.

All respondents who reported working in the preceding week were asked questions about their occupation and firm of employment. Respondents were asked whether the business they worked for was registered for VAT and to identify the sector (formal or informal) they were employed in. The classification, by StatsSA, of informal sector activities in the LFS was based on whether the individual worked in a business that is not registered for VAT.[2] Informal sector workers in the data were identified by self-reported firm size and VAT registration (Statistics South Africa 2001). The self-reported nature of this classification is therefore more likely to be an indication of the respondent's perception rather than the actual employment sector (Heintz and Posel 2008).

The StatsSA classification is based on the enterprise definition and is consistent with the guidelines set out by the 15th International Conference of Labour Statisticians (Hussmanns 2004). The guidelines specify that a business is a part of the informal sector if it is not registered and/or does not employ a lot of workers. The enterprise and its owner(s) cannot be separate legal entities, and the production process should entail non-agricultural activities. At least some of the goods and services that are produced must be traded and should not be produced solely for the owner's consumption (Hussmanns 2004). Because of these guidelines, the informal sector does not include subsistence agriculture or domestic work.

[2] In the more recent labour force surveys (Quarterly Labour Force Survey) employees are identified as informal sector employees if they work in firms that have less than five workers and if no income tax is deducted from their wages.

The focus of this study is on identifying the members of survivalist and growth-oriented microenterprises, and then finding the reasons behind entry into either tier by identifying the properties of out-of-work job seekers who enter the informal sector within six months. The term 'jobless' includes the searching unemployed,[3] discouraged work-seekers and anyone else who is not economically active (NEA) for reasons other than being enrolled in an education institution.

2.4. Methodology

While heterogeneity within the informal sector is now widely recognised, there have only been a few studies that identify the different types of workers empirically, often using cut-off points in earnings or capital (Grimm et al. 2012) to distinguish between workers. The position of these cut-offs is always somewhat arbitrary and are important for subsequent analysis. It is therefore advisable to use an approach that relies as little as possible on the inclinations of the econometrician to form the groups of labourers. As a result, I chose cluster analysis for my analysis.

Cluster analysis is an exploratory statistical technique, introduced by behavioural psychologist Tryon (1939), that partitions the data by maximising similarity within groups and minimising similarity between groups. Cluster analysis is used, in this study, to find groups of informal sector labourers who share similar conditions. Once these groups are identified, I used the

[3] (a) The person should not have worked for seven days before the survey interview.
(b) The individual should want a job and be available to start working within two weeks of the interview.
(c) The respondent must have conducted active job search or taken steps to start their own business in the four weeks before the interview (Statistics South Africa, 2001).

knowledge gained of the various characteristics of the different informal sector segments to classify each group as either survivalist or growth-oriented microenterprise labourers.

The two main clustering procedures are the hierarchical and the partition methods. The hierarchical method organises groups in a tree-like structure by using various linking procedures (e.g. nearest neighbour). The partition method separates observations through an iterative process that uses the mean or median (centroid) of the groups. I used the k-medians procedure in this study which is an algorithm that sorts the data into *k* groups based on calculating the medians of the clustering variables. This procedure is well suited for large datasets because of the computational simplicity. Additionally, the k-medians procedure is less sensitive to outliers than hierarchical methods (Anderberg 1973).

K-medians clustering algorithm begins by choosing *k* observations randomly[4] from the dataset. These data points are used to form the first *k* clusters by grouping all other observations with the nearest initial observations. Next, the medians of the variables belonging to each of the *k* groups are calculated, which then become the centroids of the next round of clusters. The new set of clusters is formed by grouping the observations with the shortest distance from the new centroids. This process is repeated with the calculation of medians of the current clusters and forming new centroids for another set of clusters. Initially the observations in each group will change a lot as the algorithm tries to find the *k* centroids that are most suitable to separate the data. These groups will become more similar as we converge to the true centroids. The process stops when the centroids of the new clusters lead to observations identical to the previous clusters. For the cluster analysis to work, I needed three components: the variables, the distance measure, and the number of clusters (*k*).

[4] Consequently, the final groups depend on the initial observations.

I based my choice of the variables on my review of the literature on the features of jobs in the informal sector. The variables must explain the job characteristics and not the individuals that opt into the work. This is because I do not want to conflate the cluster analysis with modelling the incentives and constraints of informal sector transitions. For example, I cannot cluster according to education because I want to know how education influences the job seeker's decision. I would not want the estimates for the second part of the research question to reflect my choice of clustering variables.

Earnings are an important distinguishing feature for jobs; however, I needed to expand the number of variables to show the multidimensional nature of employment in the economy. I needed to know the general characteristics of the worker's firm, such as its size, if the enterprise is registered for VAT, and whether the firm is private or public. I also needed to distinguish jobs by their occupation and their industry and include details such as whether the workers have access to organised labour representation through unions. Based on this information, the following variables should distinguish types of jobs in the economy: logged wages, union membership, firm size, industry, occupation, enterprise registration for VAT, hours worked, and whether the firm is private or public.

Once the clustering variables have been selected, the dissimilarity (distance) measure must be chosen. The distance measure that is used must be suitable for the chosen variables. The one most commonly used is the Minkowski metric, $d(x,y) = \left[\sum_{i=1}^{p}|x_i - y_i|^m\right]^{1/m}$ (Anderberg 1973). When using continuous measures, the most popular types of the Minkowski metric are the absolute-value distance (m=1) and the Euclidean distance (m=2). On the other hand, observations that are clustered according to binary variables are grouped through matching scores (Johnson and Wichern 2007). This can also be achieved through a Minkowski metric. For example, consider a pair of observations that are described by a set of *p* binary variables.

The Euclidean distance $d(x,y) = \sum_p (x_i - y_i)^2$ would then simply count the number of mismatches of zeros or ones. The set of variables is a mixture of continuous and binary variables, therefore I must use an appropriate distance measure for them.

Gower (1971) developed a distance measure that was suitable for both discrete and continuous data. This distance measure is used in the analysis. The Gower dissimilarity coefficient, $\frac{\sum_p \delta_i(x,y) d_i(x,y)}{\sum_p \delta_i(x,y)}$, weights the distance $d_i(x,y)$ of the non-missing variables by the inverse of the number of variables $\left[\sum_p \delta_i(x,y)\right]^{-1}$ used to cluster the observations in the analysis. The distance measure for binary variables is the matching measure and the distance measure for continuous variables is the absolute-value distance divided by the range of the variable.

Lastly, I needed to find the number of clusters that optimise the similarity within groups and the dissimilarity between groups. The choice of the number of groups (*k*) is based on how distinct the clusters are from each other. More groups generally yield more discrete clusters. I ran the cluster analysis over a range of values for *k* and used a stopping rule derived by Caliński and Harabasz (1974) which is based on the variance ratio criterion $VRC_k = \frac{SS_B/(k-1)}{SS_W/(n-k)}$. The optimal groupings would be found for the value of *k* that maximises the VRC_k because larger values of this metric indicate clearer groupings. This method works better for a sample of large observations because it is subject to small sample issues. One of its shortcomings is that it becomes less informative when there are groups with a few observations.

2.5. Results

2.5.1. Identifying clusters in the economy

The cluster analysis was run on all the employed respondents and it generated 15 groups[5] that have similar work and job conditions. Table 2-1 presents the summary statistics of the 15 clusters, followed by Table 2-2, which shows how the jobs were distributed across the main sectors of the economy. Using both tables, I first described the different clusters and observed any patterns that emerged. I then extracted the informal sector workers from the rest of the workforce and finally identified which clusters indicate survivalist and growth-oriented enterprise workers, respectively.

I noticed that the first five groups contained workers who received a low income for their labour (Table 2-1). Approximately 25% of workers in Cluster 1 were underemployed in terms of working hours[6] and so were 42% of workers in Cluster 2; about half of the workers in Clusters 3 and 4 worked very long hours, more than 48 hours in a week. Nearly 50% of the workers in Cluster 3 were street vendors. Most of the workers in Clusters 4 and 5 were domestic workers (Table 2-2), who also received low compensation for their labour.

In sum, the first five clusters were strongly dominated by characteristics typical of informal enterprises, even though these clusters were not exclusively informal sector jobs. Workers in these clusters were typically own-account workers and they received low hourly wages. The few workers in the first five clusters who reported working in the formal sector were shop attendants and cleaning staff, or worked in the taxi industry. Cluster 6 was mostly made up of commercial agricultural labourers who, unlike the domestic and informal sector workers, were

[5] The algorithm found that the best way to partition the data is to cluster at k=15 groups, which gives the highest variance ratio criterion ($VRC_{15} = 2\,860.85$) within the range of $k = [2, 20]$ clusters.
[6] Underemployment refers to the situation where workers, who are willing and able to work for a longer period, are constrained to less than 35 hours of labour in a week.

employed in larger firms (or farms) that are registered for VAT. However, like informal sector and domestic workers, these labourers received low remuneration.

I then considered the remaining nine clusters. In general, it is notable was the two tables that several variables showed a kind of 'break' (a step up or down) around Clusters 6 and 7. For example, the shares of both VAT-registered enterprises and being unionised were markedly higher in the upper ranges of the clusters (numbers 7 to 15) than in the first five or six clusters, as were formal employment contracts and pension membership. Other variables that showed this pattern were income, wages and firm size.

Individual clusters also suggested a marked change. Starting with Cluster 7, I could see that about 75% of employees worked in the construction industry. Approximately 57% of the workers in Cluster 7 worked in firms that were registered for VAT, but there was little worker protection in the form of unionisation (8%).

Most of the workers in Cluster 8 were in the wholesale and retail industry; unionisation was a bit higher. Cluster 9 comprised of workers in the highly unionised mining industry. All the workers in Cluster 10 were in the manufacturing industry, with the most common occupation being plant and machinery operations (approximately 35% of the employees). Most of the workers in Cluster 11 were in the financial services industry and worked in a range of occupations such as technicians, clerks and sales workers.

Workers in Cluster 12 earned almost 10 times as much as the median worker in Cluster 1. The median income in the rest of the clusters was even higher. Most workers in Clusters 12, 13 and 14 were public-sector workers in the community and social-services industry. Cluster 15 has the highest median wage, with employees who had jobs in large private-sector firms (mainly in the transport, financial and communications industries).

Table 2-2 shows that Clusters 7 to 15 consisted of mainly (public and private) formal sector employees. These labourers worked in more favourable conditions; they earned higher wages, had written contracts, were more likely to be members of a union and were able to make contributions to a retirement fund.

Most of these labourers worked in enterprises that had been registered for VAT, which left limited room for informal sector workers. Any informal sector jobs that end up being categorised in these clusters have been grouped together with formal sector work because of the approximate similarity in working conditions. Some of the most common occupations among the informal sector workers in Clusters 7 to 15, i.e. those with earnings and working conditions like formal sector workers, were in the building trade, hairdressers and barbers, mechanics and spaza (shop) workers.

Table 2-1: Summary statistics of clusters

Cluster	Wage	Weekly hours	VAT	Public	Self-employed	Firm size (< 5)	Union	Contract	Pension
1	2.86	60	2.73	0.16	15.40	94.82	1.03	9.39	3.07
2	4.22	30	2.53	0.07	17.28	98.03	0.90	10.00	3.99
3	5.83	40	3.25	0.13	8.84	96.30	1.72	19.54	7.60
4	10.62	15	1.51	0.07	27.46	98.85	0.56	8.17	3.30
5	4.00	49	0.23	0.17	76.66	90.44	0.55	3.98	7.21
6	5.17	50	90.51	0.40	7.53	17.37	7.21	42.26	17.52
7	10.18	45	56.56	1.16	24.76	35.43	8.23	33.01	27.27
8	12.22	45	92.61	0.46	12.97	25.35	15.95	52.76	42.12
9	17.36	48	98.39	0.27	0.01	2.44	90.12	89.45	87.46
10	19.94	45	95.04	0.36	4.34	5.98	40.32	72.60	69.05
11	22.06	45	90.75	1.05	13.33	22.35	14.87	67.17	55.04
12	28.3	40	100.00	75.91	0.04	8.45	70.38	80.73	87.20
13	38.14	40	0.00	90.32	2.11	9.35	69.79	76.28	87.53
14	42.96	40	100.00	81.98	0.00	2.97	76.72	84.92	93.35
15	44.00	45	95.41	0.50	8.67	7.43	16.66	74.36	73.71
Total	12.73	45	58.17	15.37	15.38	33.44	27.28	51.15	50.78

Notes: 'Wage' refers to the median hourly wage in 2012 and 'weekly hours' the median number of hours spent at work per week. All other values represent percentage of workers per cluster that possess the relevant attributes.
Source: Pooled LFS 2000-2007

Table 2-2: Employment sectors of clusters

Cluster	Domestic workers	Informal sector	Formal sector	Subsistence agriculture	Commercial agriculture	Total workers	Total informal sector workers
1	65.62	27.59	5.12	1.27	0.06	4 962	1 369
2	68.66	27.75	0.93	2.55	0.04	2 789	774
3	78.66	18.77	1.51	0.89	0.07	6 751	1 267
4	58.65	36.03	2.15	3.16	0.00	2 878	1 037
5	0.00	86.47	9.54	3.27	0.18	11 718	10 133
6	0.03	0.51	9.37	9.06	80.14	14 998	76
7	0.00	38.73	59.06	0.05	0.65	6 453	2 499
8	0.10	6.85	92.40	0.00	0.00	15 703	1 076
9	0.07	0.63	97.90	0.00	1.28	7 088	45
10	0.00	3.25	96.42	0.00	0.00	13 307	432
11	0.08	5.78	93.72	0.00	0.00	7 712	446
12	0.08	0.99	98.34	0.00	0.47	2 532	25
13	0.03	5.17	94.17	0.02	0.44	15 311	792
14	0.00	0.62	98.94	0.00	0.26	3 402	21
15	0.31	1.86	87.46	0.42	9.73	7 844	146

Notes: The first five columns represent the share of cluster workers (expressed as percentages) that work in the specified industry. Totals denote the number of survey observations per cluster and per informal sector tier.

With these groups of clusters identified, I could extract the informal sector workers from the workforce. Then I used my knowledge of the typical characteristics of informal sector segments to classify each cluster of informal sector workers in either survivalist or growth-oriented enterprises.

2.5.2. Distinguishing survivalist and growth-oriented informal enterprises

The next step in the analysis was to distinguish, within the informal sector, jobs in survivalist enterprises from those in growth-oriented enterprises. Again, in drawing this distinction I was guided by my review of the literature in Section 2.2.

As noted, the data suggested a natural differentiation between two sets of clusters, when these were ranked from lowest to highest monthly income. Six of the 15 clusters formed in the initial cluster analysis had workers, who worked variable hours at low wages and for small firms, as

well as domestic workers and agricultural workers. In these clusters, written contracts and unionisation were rare; a high proportion of workers were also self-employed with no or few employees in their enterprises. These were all attributes commonly associated with survivalist jobs.

However, there were also a significant number of informal sector workers in the remaining nine clusters, where they earned higher wages and appeared to perform jobs that were much more like those of formal sector workers, except that their firms were not registered for VAT. Generally, compared to the clusters dominated by informal sector workers (Cluster 1 to 6), the wages earned in the remaining clusters (7 to 15) were higher, employment contracts and unionisation were more common, self-employment was less common, and workers tended to work standard hours. The informal sector workers in these upper clusters appeared to be in jobs with attributes that closely resembled those in the growth-oriented enterprise tier.

I therefore categorised informal sector workers in Clusters 1 to 6 as working in typical survivalist enterprise jobs and informal sector workers in Clusters 7 to 15 as working in typical growth-oriented enterprise jobs.

To verify this classification, I now present some summary statistics of workers in survivalist enterprises, workers in growth-oriented informal enterprises, formal sector workers, the jobless, and workers in agriculture and domestic services. The purpose of these summary statistics is to confirm that there are sufficient differences across clusters to justify the allocation of informal sector workers to the respective tiers. (In addition, the statistics serve to describe the personal and household characteristics of each segment of the working-age population.)

From Table 2-3, it is clear that most of those in informal sector jobs were survivalist-enterprise workers. These workers earned low hourly wages and were usually self-employed (suggesting

a high prevalence of own-account workers, i.e. one-person enterprises without employees). Compared to workers in the other sectors, these survivalists expressed a stronger desire for alternative employment, as well as wanting to work longer hours (despite already working more hours, on average, than workers in any of the other sectors). Their counterparts in growth-oriented informal enterprises (which could be owner-operators as well as wage workers) were comparatively better paid and satisfied with their current jobs, although still earning substantially less than formal sector workers.

Table 2-3: Summary statistics of the employed labour force

Sector	Observations	Share of work force	Median hourly wage	Share self-employed	Share with contract	Hours (weekly)	Wish to work longer	Wish for different job
Survivalist	14 656	10.5%	4.54	74%	2%	46.80	28%	24%
Growth-oriented	5 480	3.9%	10.57	46%	15%	46.38‡	22%	14%
Formal sector	85 691	61.5%	21.44	6%	70%	46.13	11%	7%
Domestic and agricultural	33 621	24.1%	4.42‡	16%	26%	43.96	13%	10%
Total	139 448	100%	12.15	17%	51%	45.70	14%	10%

Notes: ‡ Median or mean not statistically different from the median or mean in the survivalist enterprise row at a 95% confidence level. Median hourly wage in 2012 value. 'Work longer' represents the proportion of labourers in a row category that are willing to work for more hours in a week. 'Different job' represents the proportion of labourers that want to work for more hours in a different job.

Table 2-4 considers the demographic composition of each of the subsectors. First, I found evidence that women were overrepresented among the jobless, the survivalist informal sector and domestic and agricultural workers which is similar to the findings by Manning (1993). A detailed look at the occupations in the survivalist tier showed that about 40% of workers were

street vendors and that this occupation was usually filled by women.[7] On the other hand, approximately 28% of the occupations in the growth-oriented microenterprise segment of the informal sector were related to the building trade, which was dominated by men.[8] Survivalist-enterprise workers tended to be a bit older, slightly less educated, belong to slightly larger households and resided in a rural area compared to the average worker. Workers in growth-oriented enterprises were likely to be head of the household, but tended to be somewhat younger and better educated and were more likely to reside in an urban area. Table 2-4 shows that 53% of survivalist-enterprise workers reported that they never or seldom hae trouble satisfying their food-consumption needs. This percentage was similar to the rate reported by the non-employed, but much lower than workers of all other sectors, including those working for growth-oriented microenterprises.

Table 2-4: Household characteristics of the working-age population

Employment status	Women	Food satis-faction	House-hold size	Education	Age	House-hold head	Urban
Jobless	62%	55%‡	5.7	9	32.5	27%	55%
Survivalist	52%	53%	4.6	8	39	62%	56%
Growth-oriented	27%	62%	4.4	9	37.5	63%‡	62%
Formal sector	39%	83%	4.1	12	37.5	60%	80%
Domestic and agricultural	58%	64%	4.3	6	38‡	58%	31%
Total	53%	62%		9	31.5	36%	59%

Notes: ‡ Median or percentages not statistically different from the median or percentages in the survivalist-enterprise row at a 95% confidence level. 'Food satisfaction': proportion of respondents who reported to never or seldom have trouble satisfying their food needs. Age and education are expressed as the median.

[7] This figure is calculated by using the detailed occupation categories in the dataset.
[8] This figure is calculated by using the detailed occupation categories in the dataset.

Table 2-4 shows the financial characteristics of each subsector. Private and public financial safety nets played an important role as non-wage income for individuals in South Africa. The largest social grants in terms of coverage and value are old-age pension and child-support grants. People who are jobless are more likely to live in households that have beneficiaries of these grants (Table 2-5). Although the share of households receiving either of these grants did not differ greatly between the survivalist and growth-oriented microenterprise workers, these two groups of workers revealed very different behaviour in terms of financial assets. Growth-oriented microenterprise workers were more likely to have savings in a bank account, a retirement plan or funeral cover than workers in survivalist enterprises. Given half of the survivalists' inability to satisfy their immediate food-consumption needs, their lack of savings for future contingencies is perhaps not surprising.

Table 2-5: Financial characteristics of the working-age population

Employment status	Old-age pension	No. of elderly	Child-support grant	No. of children	Bank savings	Retirement plan	Funeral cover
Jobless	30%	0.4	15%‡	1.9	34%	9%	21%
Survivalist	13%	0.2	14%	1.7	33%	4%	14%
Growth-oriented	12%‡	0.2‡	10%	1.4	45%	11%	23%
Formal sector	9%	0.2	5%	1.2	71%	31%	49%
Domestic and agricultural	11%	0.2‡	10%	1.4	26%	7%	18%
Total	21%	0.3	12%	1.7	44%	14%	28%

Notes: ‡ Mean or percentages not statistically different from the mean or percentages in the survivalist-enterprise row at a 95% confidence level. Old-age pension and child-support grant expressed as percentages of households with at least one beneficiary. Data on grants were only collected in the September rounds of the LFS. Elderly and children are the average members of the household who are older than 60 and younger than 15 years, respectively. Bank savings, retirement plans and funeral cover expressed as percentages of individuals who have these savings.

The characteristics of workers allocated to the informal sector tiers broadly correspond to the features of informal sector survivalist and growth-oriented microenterprises discussed in the literature review (Section 2.2). The data-driven clustering technique therefore seems to have partitioned the data in a sensible manner. The preliminary analysis suggests that upper-tier informal sector work has higher returns than survivalist work and that the lives of survivalist workers are more difficult. One would expect job seekers who are willing (and able) to work in the informal sector to prefer upper-tier work. However, most informal sector workers are in the survivalist tier, which presumably reflects some combination of higher retention and higher entry rates into this lower tier. The following section examines labour-market transitions, with a specific look at entry into and exit out of the survivalist and growth-oriented informal sector tiers.

2.5.3. Transitions

The South African informal sector is known to experience a high rate of churning or mobility of workers, but these dynamics may be very different for survivalist and growth-oriented enterprise workers (Lloyd and Leibbrandt 2018). Workers in growth-oriented microenterprises were in a better position in terms of material well-being than survivalist enterprise workers, so one would assume that most job seekers who are unable to secure formal sector employment would prefer to work in growth-oriented rather than survivalist enterprises. However, due to a lack of access to information, and financial or human-capital barriers to entry may restrict access to these positions.

To analyse these dynamics more rigorously, I constructed a transition matrix using the LFS panel collected between September 2001 and March 2004. The transition matrix in Table 2-6 shows the probabilities of moving from one state to another between successive six-month

surveys. For example, in Table 2-6, the probability of a jobless person moving to a survivalist enterprise in the following six months is 3.92%.

Table 2-6: Transition matrix with a six-month period

Employment status		Period $t+1$				
		Jobless	Survivalist	Growth-oriented	Formal sector	Domestic and agricultural
Period t	Jobless	79.20	3.92	1.21	10.06	5.62
	Survivalist	38.77	36.77	3.93	13.73	6.80
	Growth-oriented	32.60	10.64	17.87	33.51	5.38
	Formal sector	16.39	2.18	1.87	76.66	2.91
	Domestic and agricultural	25.83	3.08	0.88	8.93	61.27

Let us start by looking at transitions into the informal sector. First, those who were initially jobless were relatively unlikely to enter the informal sector, particularly the growth-oriented enterprise tier. If they did enter, jobless persons were almost three times as likely to enter the survivalist tier than the growth-oriented tier (3.92% compared to 1.21%). Secondly, those already working in survivalist-tier enterprises were not very likely to move into the better, growth-oriented enterprise tier (3.93% probability). Given the clear comparative benefits of the latter tier (see Section 2.5.2), this suggests that the barriers to entering the growth-oriented enterprise tier were greater than for the survivalist tier. In contrast, moving from the growth-oriented to the survivalist tier appeared to be easier (10.64% probability).

Domestic and agricultural workers were also much less likely to transition into growth-oriented than into survivalist informal enterprises. On the other hand, formal sector workers appeared to be almost equally likely to enter either tier (2.18% and 1.87%), perhaps since workers who have successfully overcome formal sector barriers in the past were better positioned to surmount barriers to entry into growth-oriented informal enterprises.

When informal sector employees did leave this sector, those from survivalist enterprises were much less likely to transition into the formal sector (13.73%) than workers from growth-oriented enterprise (33.51%) – but more likely to transition into domestic services and agricultural work. It seems that growth-oriented informal sector firms provided a viable springboard into higher-paying formal sector jobs, whereas the same could not be said for survivalist informal enterprises.

It is worth noting that informal sector work is less stable than any of the other working states. Within the informal sector, those working in survivalist enterprises were more likely to remain there (36.77%) than those in growth-oriented enterprises (17.87%), probably because the latter group was more likely to move to a formal sector job, as noted earlier. Workers in survivalist enterprises were also more likely to become jobless than those in growth-oriented enterprises (38.77% compared to 32.6% probability), but both these groups were much more likely to end up being jobless than workers in the formal sector (16.39%).

Those who end up in the survivalist tier would then be the job seekers who were unable to overcome the financial and human capital barriers to work in either formal enterprises or growth-oriented informal enterprises, but who desperately needed an income to meet basic personal or household needs. This hypothesis can be scrutinised more rigorously using a multivariate regression framework, as in the following section.

2.5.4. The determinants of informality

Amidst the objectionable working conditions and poor prospects of upward mobility, unemployed people have a higher probability of finding a job in the survivalist tier than in growth-oriented enterprises. A possible explanation is that job seekers who become survivalist enterprise workers are not sufficiently protected by private or public safety nets and their

household responsibilities induce them to accept the harsh work conditions. On the other hand, the more appealing growth-oriented enterprises are not able to accommodate enough job seekers. This could be due to a lack of income opportunities in the market or high barriers to entry.

For this section, I investigated factors that determine transition from joblessness into survivalist and growth-oriented microenterprises. I analysed the relationship between, on the one hand, worker and household characteristics and, on the other, the probability of people entering either of the two informal sector tiers. Specifically, I investigated how an individual's human capital, access to household income and demographic characteristics affected the likelihood that they would enter the survivalist or growth-oriented enterprise tiers, respectively. I used Multinomial logits, linear probability models with their fixed effects to assess how such factors are correlated with an individual's choice to enter one of these tiers.

One of the properties of the Multinomial logit is the Independence of Irrelevant Alternatives. This axiom says that the relative likelihood of choosing Y_1 over Y_0 is the same even when another alternative (Y_2) is added. In this case, the relative likelihood of choosing the survivalist tier over being jobless is the same even when another alternative (growth-oriented tier) is added. Because the relative likelihoods between (Y_0 & Y_1), and (Y_0 & Y_2) do not change, we can think of the multinomial logit with three categories as a group of two binary estimates. Under these conditions, I can apply the linear probability model on the three categories and estimate its fixed effects. The three different methods, therefore, add robustness to the analysis.

The results in Table 2-7 suggest that having more household income increased the probability of jobless people entering growth-oriented informal enterprises. They were, therefore, less likely to enter the survivalist enterprise tier if they initially had a higher household income.

This supports the supposition that the lower tier is, indeed, a survivalist tier, most often entered by the poorest members of a community.

In the regression results, we see that the effect of non-wage income on the probability of entering survivalist enterprises is negative and statistically significant. The probability of entering growth-oriented enterprises, however, is positive but is statistically insignificant. These results imply that income from survivalist enterprises are set so low that household income can deter people from entering these jobs which illustrates the effect that reservation wages have on this tier. On the other hand, reservation wages anchored by household income do not have this deterrent effect on employment into growth-oriented enterprises.

Table 2-7 indicates that those who joined survivalist enterprises had fewer years of schooling on average, whereas more schooling slightly increased the probability of workers entering growth-oriented informal enterprises. The results from Table 2-8 show that probability of working in survivalist enterprises was the highest for women who had only a primary school education. Those women who lived in households with higher per capita income and had some secondary or tertiary education were more likely to find work in the upper-tier of the informal sector. The education barrier to entering growth-oriented enterprises appeared to be less pronounced for men than for women as is shown in Tables 2–8 and 2–9. Men did not need to complete as high a level of education as women to find work in growth-oriented enterprises.

Those who are members of racial groups that could accumulate capital, attend high-quality schools and build high-income social networks during the apartheid era were less likely to enter the survivalist tier. For entry into growth-oriented informal enterprises the race effect was not significant. This suggests that there are physical and human-capital barriers that need to be overcome to join growth-oriented enterprises – and those that could overcome these barriers did, indeed, enter that tier – whereas there are no such barriers to entry into the survivalist tier.

Regarding gender effects, I found that men who belong to the white or Indian racial groups were more likely to work in a growth-oriented microenterprise than their black or coloured counterparts. For women, the effect of race on entry into informal sector tiers was less important.

Being married or the head of a household – i.e. being in a position associated with more household responsibilities – increased the likelihood of non-employed individuals entering either informal sector tier. But there was an important gender difference: men who were heads of households were more likely to enter growth-oriented enterprises, whereas women in that position were more inclined to enter survivalist enterprises.

The evidence regarding the effect of larger household size appears to be mixed. Men who experienced an increase in their household size were spurred on to try to enter growth-oriented enterprises rather than survivalist enterprises, whereas this did not seem to apply to women. Men were more inclined to search for better jobs in the informal sector when their household size increased. For women, being responsible for providing for a household was more important (in their decision to try to enter the informal sector) than the number of people in the household.

The effects of job seekers' characteristics could be identified more persuasively by taking advantage of the panel component of the data and allowing for fixed effects in the regressions. Fixed effects estimation removed the time invariant unobserved heterogeneity that biased the results of the observed characteristics. The change of the direction for the income effect for men in Table 2-9 illustrated that the bias appeared to be a larger problem for the growth-oriented microenterprise regressions of men. Fixed effects removed this bias and by doing so revealed that men who have experienced an increase in their per capita household income were more likely to join a growth-oriented microenterprise. The fact that men who have gained

access to financial capital were also more likely to enter the growth-oriented enterprises showed that capital may have also been a barrier for men entering the upper tier.

Men who became survivalist enterprise workers reacted to a change in household attributes in a similar manner as women who entered the informal sector; the role wass more important for entry than the size. On the other hand, men who have experienced an increase in their household size or marry had a higher probability of working in growth-oriented microenterprises.[9] The data on men's ability and women's inability to secure better jobs in the informal sector if the household size increased illustrate the gender roles in the informal sector and expectations from the household.

Table 2-7: Multinomial logistic regressions (MNL), linear probability models (LPM), and linear probability models with fixed effects (FE) of job seekers who were jobless in the previous six months

	Survivalist			Growth-oriented		
	MNL	LPM	FE	MNL	LPM	FE
HH income (-1)[1]	-0.155***	-0.006***	-0.003	0.047	0.0003	0.004**
	(5.16)	(5.76)	(0.89)	(0.89)	(0.49)	(2.38)
Primary[2]	0.039***	0.002***		0.056**	0.001**	
	(2.99)	(3.10)		(2.13)	(2.08)	
Secondary	-0.052**	-0.002***		0.005	0.0001	
	(2.37)	(2.83)		(0.14)	(0.24)	
Tertiary	-0.446	-0.007		0.125	0.002	
	(1.63)	(1.37)		(0.66)	(0.74)	
Age	0.148***	0.005***	0.005***	0.151***	0.002***	0.002
	(9.62)	(10.01)	(2.59)	(5.28)	(5.77)	(1.61)
Age squared	-0.002***	-0.0001***	-0.0001***	-0.002***	-0.0001***	-0.0001**
	(10.30)	(11.14)	(2.76)	(6.39)	(7.25)	(2.07)
Coloured	-0.721***	-0.020***		-0.050	-0.0004	

[9] Once the fixed effects have been taken into account.

	(4.91)	(4.56)		(0.23)	(0.19)	
Indian	-1.063***	-0.024***		0.372	0.005	
	(3.37)	(3.32)		(1.24)	(1.25)	
White	-1.277***	-0.027***		-0.054	-0.001	
	(4.56)	(4.36)		(0.20)	(0.23)	
HH head	0.741***	0.040***		1.256***	0.02***	
	(9.80)	(12.36)		(9.25)	(10.44)	
Married	0.446***	0.021***	0.007	0.533***	0.009***	0.002
	(7.05)	(8.48)	(0.78)	(4.61)	(5.81)	(0.33)
HH size	-0.044***	-0.002***	-0.001	-0.03	-0.0003*	0.001
	(4.01)	(4.26)	(0.7)	(1.48)	(1.65)	(1.49)
Constant	-5.189***	-0.016	-0.029	-7.606***	-0.021***	-0.039*
	(12.85)	(1.15)	(0.69)	(10.64)	(2.66)	(1.78)
Observations	33 895	33 498	33 666	33 895	32 577	32 736

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Standard errors in parentheses. Regression also controlled for province, rural/urban and period. Base category: black women who are jobless.
[1] Logged per capita household income in 2012 values.
[2] Primary, secondary, tertiary: splines of years completed schooling.

Table 2-8: Multinomial logistic regressions (MNL) and linear probability models (LPM) with fixed effects (FE) of women who were jobless in the previous six months

	Survivalist			Growth-oriented		
	MNL	LPM	FE	MNL	LPM	FE
HH income (-1)[1]	-0.161***	-0.007***	-0.002	0.124	0.001	0.002
	(4.26)	(4.96)	(0.54)	(1.32)	(1.63)	(1.57)
Primary[2]	0.041***	0.002***		-0.007	-0.0001	
	(2.60)	(2.58)		(0.14)	(0.15)	
Secondary	-0.023	-0.001		0.303***	0.002***	
	(0.82)	(1.07)		(4.34)	(4.74)	
Tertiary	-0.423	-0.007		0.238	0.006**	
	(1.26)	(1.03)		(1.05)	(2.21)	
Age	0.174***	0.006***	0.009	0.195***	0.001***	0.001
	(8.58)	(8.48)	(2.87)***	(3.54)	(3.35)	(0.80)
Age squared	-0.002***	-0.0001***	-0.0001***	-0.002***	-0.0001***	-0.0001
	(8.70)	(8.96)	(2.66)	(3.56)	(3.46)	(0.68)
Coloured	-1.109***	-0.026***		-0.6	-0.003	
	(5.35)	(4.79)		(1.38)	(1.33)	
Indian	-1.681***	-0.032***		-0.077	0	

	(3.64)	(3.76)		(0.16)	(0.03)	
White	-1.319***	-0.028***		-1.38***	-0.009***	
	(4.13)	(3.86)		(2.70)	(3.23)	
HH head	0.8***	0.045***		0.484	0.003	
	(7.87)	(9.88)		(1.51)	(1.63)	
Married	0.471***	0.023***	-0.001	0.561**	0.004***	0.004
	(5.67)	(6.84)	(0.08)	(2.50)	(2.92)	(0.95)
HH size	-0.04***	-0.001***	-0.002	-0.019	-0.0001	-0.0001
	(2.90)	(2.90)	(1.28)	(0.52)	(0.44)	(0.25)
Constant	-5.826***	-0.032*	-0.102	-10.047***	-0.019***	-0.025
	(11.13)	(1.85)	(1.63)	(7.49)	(2.70)	(1.16)
Observations	21 534	21 412	21 509	21 534	20 691	20 782

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Standard errors in parentheses. Regression also controlled for province, rural/urban and period. Base category: black women who are jobless.
[1] Logged per capita household income in 2012 values.
[2] Primary, secondary, tertiary: splines of years completed schooling.

Table 2-9: Multinomial logistic regressions (MNL) and linear probability models (LPM) with fixed effects (FE) of men who were jobless in the previous six months

	Survivalist			Growth-oriented		
	MNL	LPM	FE	MNL	LPM	FE
HH income (-1)[1]	-0.128**	-0.005***	-0.0001	-0.017	-0.001	0.008*
	(2.53)	(2.87)	(0.01)	(0.25)	(0.39)	(1.76)
Primary[2]	0.051**	0.002**		0.067**	0.001**	
	(2.18)	(2.30)		(2.10)	(2.09)	
Secondary	-0.098***	-0.004***		-0.119**	-0.003**	
	(2.72)	(3.10)		(2.55)	(2.54)	
Tertiary	-0.500	-0.007		-0.195	-0.004	
	(1.05)	(0.85)		(0.5)	(0.62)	
Age	0.124***	0.005***	0.011**	0.172***	0.004***	0.001
	(4.91)	(6.14)	(2.41)	(5.07)	(6.46)	(0.2)
Age squared	-0.002***	-0.001***	-0.001**	-0.003***	-0.0001***	-0.0001
	(6.14)	(7.75)	(2.44)	(6.23)	(7.97)	(0.9)
Coloured	-0.256	-0.008		0.164	0.004	

	(1.2)	(1.15)		(0.64)	(0.64)	
Indian	-0.194	-0.008		0.835**	0.022**	
	(0.44)	(0.55)		(2.13)	(2.00)	
White	-1.352**	-0.027**		0.823**	0.020**	
	(2.27)	(2.31)		(2.48)	(2.25)	
Head	0.699***	0.039***		0.666***	0.023***	
	(4.32)	(5.78)		(3.29)	(4.39)	
Married	0.772***	0.036***	0.030	0.956***	0.027***	0.055***
	(5.29)	(5.98)	(1.3)	(5.19)	(5.81)	(3.28)
HH size	-0.047**	-0.002***	-0.004	-0.056**	-0.001**	0.004**
	(2.53)	(2.89)	(1.51)	(2.23)	(2.32)	(1.97)
Constant	-4.806***	-0.013	-0.146	-6.593***	-0.039**	-0.032
	(7.44)	(0.6)	(1.59)	(7.78)	(2.27)	(0.48)
Observations	12 361	12 086	12 157	12 361	11 886	11 954

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Standard errors in parentheses. Regression also controlled for province, rural/urban and period. Base category: black men who are jobless.
[1] Logged per capita household income in 2012 values.
[2] Primary, secondary, tertiary: splines of years completed schooling.

2.6. Conclusion

One of the challenges in analysing the informal sector lies in identifying the survivalist and growth-oriented tiers of the informal sector empirically. In this study, I used a data-driven clustering technique to classify jobs and workers into two tiers. I found that approximately 73% of the South African informal sector consisted of survivalist-enterprise workers (owners or employees) that worked for low earnings in very small firms. These workers had very little satisfaction in their jobs and would have liked to work in different jobs. Unfortunately, they had little hope of transitioning into higher-paying sectors of the labour market. The growth-oriented microenterprise tier, comprising about 27% of informal sector workers, consisted of workers and owners who earned higher wages in somewhat larger firms. These workers were generally more satisfied with their situation; they also had a reasonable chance of using their upper-tier informal sector employment as a springboard into higher-paying formal sector firms.

My regression analysis indicated that those who entered jobs in the survivalist tier of the informal sector were usually from the most disadvantaged racial groups, who had fewer years

of schooling, and who experienced a high level of household responsibility but low levels of household income. Entrants into the growth-oriented informal sector tier were typically better educated and had higher levels of household income. This suggested that entry into the survivalist tier occurs mainly based on a need to provide for the most basic household requirements, given an apparent lack of alternative sources of income. Accessing the more desirable jobs in growth-oriented informal sector firms required overcoming the human-capital and financial barriers that hamper or prevent entry into this segment. Furthermore, heterogeneity within the informal sector is gendered, meaning that most jobs in the survivalist tier are filled by women, while many of the jobs in the growth-oriented microenterprises are filled by men.

Understanding the heterogeneity within the informal sector provides important information about the large-scale and open unemployment in South Africa. A large part of the informal sector acts as an employer of last resort, while there is a smaller, more entrepreneurial portion that generates higher income – but job seekers cannot enter it as easily because of the barriers to entry.

3. The post-crisis gender divergence of informal sector employment

3.1. Introduction

Prior to the financial crisis, the South African economic policy framework had an optimistic outlook on the how the economy would perform in the subsequent years. For instance, the Accelerated Shared Growth Initiative of South Africa (ASGISA) aimed to halve unemployment by 2014 by taking advantage of the higher growth rates (The Presidency 2006). Despite this, South Africa's economy is still characterised by large-scale and open unemployment matched with a small informal sector. This has sparked interest among researchers (Banerjee et al. 2008; Yu 2012; Kingdon and Knight 2004) who have tried to find reasons for the informal sector's inability to absorb surplus labour. The understanding that there exists some form of segmentation within the economy led former President Mbeki to coin the term 'second economy' to describe the poorer segment (The Presidency 2006), but this soon became a contentious term to policy makers and academics alike (Valodia and Devey 2010; Philip 2010). This was because the common perception about the informal sector and the second economy was that it would disappear as the economy grew (The Presidency 2006). The presumption here is that the informal sector will act as a countercyclical safety net for excess labour when the economy is contracting (Maloney and Bosch 2007; Loayza and Rigolini 2006; Charmes 2009; Azarnert 2011). Or alternatively, that the informal sector will shrink as the economy develops (Loayza and Rigolini 2011; Porta and Shleifer 2014; Heintz and Pollin 2003).

This was the context in which the Great Recession occurred, a shock that gave us an opportunity to learn some interesting lessons about how informal sector employment functions. One insight that is immediately gleaned from this experience is that the South African informal sector may be more procyclical than we thought (Burger and Fourie 2018). In Section 3.5 I

show that informal sector employment decreased during the Great Recession and increased during the post-crisis economic recovery. This suggests that there is another way of thinking about the informal sector than the view that is often espoused by South African policy makers.

During the post-crisis recovery, a gender divergence emerged within informal sector employment: male employment recovered with the rise in GDP, whereas female informal sector employment could not keep up with male employment (Rogan and Skinner 2018). In this chapter I ask why female and male total informal sector employment diverged as the business cycle improved.

I approached this question by using both microeconomic and macroeconomic data and modelling techniques. From the macroeconomic perspective, I showed that the elasticities of female and male informal sector employment to the GDP are significantly different, which demonstrates the existence of the gender divergence. Once I established the veracity of the gender divergence at a macroeconomic level, I moved to the microeconomic perspective to find the causes of this gap.

I proposed three hypotheses regarding this gender divergence. Firstly, industries with a higher proportion of men may have benefited disproportionately from the economic upswing. Secondly, the strides taken to equalise schooling for all genders have increased women's human capital accumulation enough to deter entry into the survivalist segment of the informal sector, but not enough to overcome the barriers to entry into the growth-oriented tier. Lastly, the social norms and financial safety nets provided by the household have resulted in different labour market outcomes for women and men. Specifically, changes in household structure, the availability of alternative income sources and the obligations of caring for household members may have constrained women from entering the informal sector.

For my first attempt in explaining determinants of the gender divergence, I developed a decomposition technique that disaggregated the industry-specific contributions to the gap and separated the effects of the initial gender distribution from the employment elasticity effects. This technique can be compared to the Oaxaca-Blinder decomposition (Oaxaca 1973; Blinder 1973) that is often used to decompose wage inequality between two population groups. By extending the model to account for industry-specific gender gap, I could tell which industries contributed most to the gender divergence in the informal sector. I analysed the second hypothesis by applying the Mincer model to the probability of finding a job in the informal sector. The third hypothesis was tested with a probit model that reflects the impact of household formation and financial safety nets on informal sector employment.

In this chapter, I identified highly elastic industries with so few women that the additional jobs that were created in the post-crisis stage had a small effect on total female informal sector employment. I also found that some industries had better female representation at the beginning of the study, where men's elasticity outperformed women's elasticity. I learnt that, although human capital formation is important for understanding informal sector employment outcomes, it does not adequately explain the gender divergence. Lastly, I found that controlling for household factors is very important in explaining the gender inequality within informal sector employment.

The chapter is structured as follows: in Section 3.2, I discuss the literature pertaining to the research focus and formulate the reasoning behind the three propositions. In Section 3.3, I describe the data that are used in this chapter before explaining the methods used in the analysis in Section 3.4. This leads us to the results in Section 3.5, where the validity of the three propositions are examined, followed by a summary that concludes the chapter in Section 3.6.

3.2. Literature review

At the onset of the financial crisis, both men and women experienced a decline in employment. This was followed by what seemed to be a growing divergence of informal sector employment between the sexes in the recovery period. In this chapter, I tried to find the reason for the growing gap since the South African economy began to recover from the Great Recession. However, before I could explain the post-recession divergence, I needed to understand the role of the informal sector within the macroeconomic context.

Total informal sector employment had already begun declining before 2008. In reality, the South African economy started showing signs of dampening growth even before the recession had been declared. The South African economy experienced a period of consumption-led growth between 2003 and 2007 (OECD 2008). The monetary policy committee responded to the growing inflation by increasing the repo rate in 2006 (SARB 2006) which slowed down private consumption (OECD 2010). This slowdown had dampening consequences on employment just before the recession occurred. The effects of the financial crisis began to show on the economy – output declined by about 1.8% in 2009 (OECD 2010). Informal sector employment followed the same trend as the rest of the economy during the crisis. As the economy took a downturn, informal sector employment declined, even before the effects were seen in formal-sector employment (Verick 2012).

3.2.1. The informal sector's cyclical relationship to the formal sector

A somewhat stylised fact is that the informal sector should operate in a countercyclical manner against the formal sector. That is, when the formal sector experiences a period of contraction, the informal sector should absorb the excess labour. Similarly, the informal sector would

contract as the formal sector expands. The cyclical relationship between the formal and informal sectors depends on whether the labour market is segmented or integrated (Fiess et al. 2010; Loayza and Rigolini 2011; Maloney and Bosch 2007). When informal sector employment moves in a countercyclical manner, it is indicative of a segmented labour market (Maloney and Bosch 2007; Kingdon and Knight 2007). If the formal and informal sectors are integrated, however, employment in both sectors should move in a procyclical manner (Fiess et al. 2010).

To understand the mechanics behind the cyclical movements, let us consider a small open economy with a tradeable and a non-tradeable sector (Obstfeld, Rogoff and Wren-Lewis 1996), where the informal sector will be represented by the non-tradeable sector due to its capacity and capability constraints on international trade. Fiess et al. (2010) extend this model by including credit constraints to entering the informal sector and adding heterogeneity in the entrepreneurial ability of its labourers. This model was applied to Latin American countries and the results indicated that binding wage rigidities in the tradeable/formal sector was the cause of segmentation in the labour market. The procyclicality of the informal sector, on the other hand, depended on the changes in demand from the non-tradeable sector.

To show how these results are applicable in South Africa, it is important to briefly discuss the changes that occurred regarding private consumption. Operating beyond the domestic market requires a degree of formalisation that even growth-oriented informal enterprises cannot attain; therefore, the informal sector relies on domestic demand entirely. Within the domestic market, informal sector firms must compete with a large and efficient formal sector (Philip 2010). This is a distinguishing feature of South Africa's economy compared to other middle-income countries with a much larger informal sector and lower open unemployment. As the economy recovered, there was a rise in private consumption which had a positive effect on formal-sector and informal sector employment, albeit the latter to a lesser extent. The co-movements of GDP,

formal-sector employment and informal sector employment imply that the informal sector have short-term procyclical behaviour during phases with strong fluctuations (Burger and Fourie 2018).

A procyclical informal sector with a dominant survivalist enterprise seems counterintuitive. If a large part of the informal sector functions as an easy-entry employer of last resort, then more people should enter the informal sector during the recession and leave as the economy recovers. This is not what I witnessed in the period between 2008 and 2015; the informal sector behaved in a procyclical manner. According to Fiess et al. (2010) the informal sector can perform in a procyclical manner if the source of the shock comes from a non-tradeable sector. This seems to be the case in South Africa. A decline in informal sector employment corresponded to a contraction in the GDP's private consumption and, similarly, the subsequent improvement. Perhaps the procyclicality was caused by surplus demand, which would be consistent with the findings of Fiess et al. (2010). For example, if the economy's recovery is accompanied by a strong increase in demand for construction – an industry that provides non-tradeable services – then the informal sector may pick up the share of construction that the formal sector could not provide. On the other hand, if an industry such as the retail industry experiences a much weaker recovery, there would be little room for expansion in the informal sector.

An alternative explanation for the procyclical nature of the informal sector is that South Africa has a more integrated, rather than a segmented, economy. Critiques of the existence of a secondary economy explore the linkages in the value chain between the formal and informal sector (Philip 2010). The informal sector operates within a system of strong backward and weak forward linkages with the formal sector (Philip 2010; Meagher 2013; Devey, Skinner and Valodia 2006). The formal sector dominates the market and creates standardised products and services that consumers are familiar with. Informal sector firms that trade finished goods from the formal sector cannot add much value to the products prior to resale, whereas informal firms

that purchase intermediary goods add to the value chain but cannot produce in a scalable manner due to either affordability or capacity constraints.

3.2.2. Institutional features of the period of interest

Several institutional changes took place since 2008 that may affect my analysis. These institutional changes have taken the form of either policy, regulation or legislation and warrant a separate discussion. The major event of the time was the financial crisis which caused the downswing that began in December 2007 and continued until September 2009 (Venter 2011). During this time there was a clear decrease in employment for women and men. Also, by the end of 2007, Statistics South Africa discontinued the biannual Labour Force Survey (LFS) and replaced it with the current Quarterly Labour Force Survey (QLFS). Other changes that are discussed in this segment include tax reform, changes in social grants and additional restrictions on informal trade.

3.2.2.a. Tax reform

The adjustment of the VAT threshold from R300 000 to R1 million is a technicality that may have affected the informal sector employment totals artificially. During the 2008 National Budget speech, the Minister of Finance announced an increase on the VAT registration threshold from R300 000 to R1 million. New companies that generated an annual revenue of more than R300 000 but less than R1 million were no longer required to register for VAT and existing companies could deregister their businesses. The change of the threshold was implemented in the following year. This had implications for measurement of informal sector employment because of the official definition adopted by Statistics South Africa. A person is identified as being in the informal sector if they work in a firm with no more than five employees that is not registered for VAT and/or income tax. An increase in the registration threshold could artificially increase the number of informal sector workers. It is possible that

higher earning firms that previously would have had to register no longer had to do so and were counted as informal enterprises.

The adjustment of the VAT threshold in 2009 has meant that small enterprises had more scope for growth before they would be required to formalise. So, businesses that generated revenues of between R300 000 and R1 million could have been established in the recovery period and remained within the informal sector. The QLFS does not collect any information about business revenue or turnover so I could not identify the workers that are employed in these businesses. I do know (see Section 2) that these firms fall into the growth-oriented tier, which has a high male representation and often requires a high level of human capital.

3.2.2.b. Social grants

Other changes came from the Department of Social Development, which provides a financial safety net for those who are unable to meet their basic needs. Two of the largest grants, namely the old-age pension and the child support grant, were extended to more beneficiaries from 2008 to 2011. Although the old-age pension is intended for older persons, it is often shared as a part of the household income with prime-age adults, some of which are the working poor (Van der Berg and Bredenkamp 2002; Burns, Keswell and Leibbrandt 2005; Ardington, Case and Hosegood 2009).

The state-funded financial grants have helped households to cope with poverty and alleviates the need for some people to enter the survivalist tier of the informal sector. The child-support grant and old-age pension underwent some important age-related changes between 2008 and 2011. In 2008, the child-support grant was only given to children up to the age of 14 (National Treasury 2008). The beneficiary threshold was gradually increased to 15 years in 2009 (National Treasury 2008) and finally to 18 years in 2011 (National Treasury 2012). This change in the age threshold meant that more children from poor households received some financial protection from the state. Children are eligible for these grants if the households they live in

pass the means test. Therefore, children living with working poor and unemployed parents also benefit from these grants. This gives much needed relief to prime-age adults who struggle to provide in the basic financial needs of their family and may weaken the incentives to enter survivalist enterprises.

The other major change in the grants system came from the gender equalisation of the old-age pension, in 2012, which reduced the age at which men could start claiming from 65 to 60 years (National Treasury 2012). These grants were intended for older persons and have provided much needed liquidity to their households. Through income sharing, prime-age adults have had indirect financial assistance from the state, the labour market effects of which are ambiguous. Bertrand et al. (2003) found a reduction in the number of hours worked for adults who lived with pensioners while Posel et al. (2006) found an increased likelihood of women entering the labour market. In the previous chapter, I found a decreased likelihood of entering survivalist enterprises when the household income had been increased. Perhaps the old-age pension, like the child-support grant, gives adults the margin to look for better labour market outcomes instead of being forced into subsistent enterprises.

3.2.2.c. Legislation

Entrepreneurs who are forced into survivalist work are often faced with restrictive regulations governing their places of trade. A substantial part of informal retail takes place in residential areas where bylaws restrict the expansion of commercial activities. A large portion of survivalist occupations are street vendors which have been affected by some controversial regulations. In major metros like Durban and Johannesburg, policies such as Operation Clean Sweep resulted in the harassment and loss of goods of street vendors (Rogerson 2016). South Africa is not unique in its implementation of such operations. Several countries were subjected to a similar programme, such as Zambia in 1999 (Potts 2008) and Zimbabwe in 2005 (Musoni 2010). In all these cases the policies had names that referenced ‘cleaning’ urban spaces of

informal activities, which provides an indication of how this part of the informal sector is perceived. In South Africa, Operation Clean Sweep was successfully challenged by special interest groups like the South African National Retail Alliance, the South African Informal Trading Forum and the Socio-Economic Rights Institute of South Africa (Social Law Project 2014). These regulations could have dampened growth in the informal retail sector, in which women are concentrated.

A detailed empirical measurement of the effect of these policies is beyond the scope of this chapter because of the complex ways they interact with the three propositions made. I did, however, at least try to control for the direct impact of social grants. The effects of the VAT threshold, changes in social security and restrictive regulation will be included implicitly. For an explanation of how I did this, see Section 3.5.3.

3.2.3. What caused the gender divergence?

Based on the literature, I formed at least three hypotheses that can explain the gender divergence during the post-crisis recovery. The first hypothesis concerns the composition of industries and occupations in which women and men work within the informal sector. Certain industries and occupations are more responsive to changes in GDP than others. The nature of jobs that men take on in the informal sector may display more elastic traits than those taken on by women. The second hypothesis is centred around human capital and its usefulness in informal sector employment. Large gains have been made by women regarding education and experience since the democratic transition. Having more years of schooling may have pulled women out of the informal sector job queue. The last is that social norms in the household or informal institutions have not been conducive to female informal sector employment and as a result, women could not take advantage of the economic upswing. This could cause the

widening gender gap found by Rogan and Skinner (2018). The following subsections contain arguments for each of these hypotheses, after which follows the empirical section.

3.2.3.a. Proposition 1: Industries

After the financial crisis, some industries in the informal sector could have recovered at a faster pace and it may have been the case that women could not easily find employment in those parts of the economy. Section 2.5.4 showed the differences in the distribution of women and men in survivalist and growth-oriented enterprises. The differences in occupation and industry composition of employment in the informal sector could be very different for women and men.

Earlier in this study, I discussed the short-term procyclical nature of the informal sector in South Africa. This is most probably because the informal sector was responding to changes in domestic demand (Fiess et al. 2010). Some industries in the informal sector could have benefitted from the increased demand of formal-sector services by taking part in the value-added chain (Philip 2010). One such industry is construction, which has sustained steady growth as the economy recovered from the financial crisis, although much of this is owed to building capacity for the 2010 World Cup (Venter 2011). The available StatsSA surveys only include formal-sector enterprises but it is possible that many of the informal sector firms have benefitted from helping in the building completion phase and may have boosted employment for men.

Another important industry to note during this period of economic recovery is transportation and communications. It was aided by the fact that increasing population coupled with the stagnant state-provided transport led to a shortage of public transport (Beg, Bickford, Denoon-Stevens, Harber, Jitsing, Moosajee and Schmidt 2014). The taxi industry has been an important supplier of transportation and it comes as no surprise that this portion of the informal sector

has grown in the recovery period. Spatial planning in South Africa is conducted with little consideration for public transport such as rail, resulting in an increase in road usage (Walters 2013). In fact, trains and buses are used by a small fraction of labourers to get to their places of work (Kerr 2017). On the other hand, there are a large number of taxi users (Kerr 2017) meaning that there is a sizeable informal sector transport industry, which is also a male-dominated industry.

Informal sector enterprises in the retail industry function as distribution channels for goods produced in the formal sector (Woodward, Rolfe and Ligthelm 2014). These channels provide the necessary links to customers that live far away from economic hubs. These enterprises vary in size and revenue. They can take the form of spaza shops in residential areas (Ligthelm 2005) or street vendors operating close to public transport amenities (Mkhize et al. 2013) and like most small-scale businesses, the risk of failure is high. Some fail because of internal flaws and others because of external competition from expanding formal-sector supermarkets (D'Haese and Van Huylenbroeck 2005). Retail, street vendors in particular, in the informal sector has always been congested because of the relative ease of entry (Mkhize et al. 2013). The inability of these small businesses to negotiate wholesale prices while still catering to the needs of lower income distribution makes sustainability difficult. The increased competition from formal-sector supermarkets has made it an even tougher challenge. It therefore comes as no surprise that informal sector employment in this industry has not grown.

3.2.3.b. Proposition 2: Human capital

To understand why women may not have been able to take full advantage of increase in employment in certain industries, I turned to human capital formation. Low levels of human capital create structural impediments to employment in the labour market. Section 2.5.4 shows that higher levels of education increase the likelihood of employment in growth-oriented enterprises. I have also found that entry into growth-oriented enterprises is more likely for men

and that there are barriers that prevent women from entering this segment of the informal sector. It is easier for women to enter the survivalist segment. Perhaps improvements in human capital for women may have deterred women from working in the survivalist tier but were not enough to overcome the barriers in the growth-oriented tier. To understand the effects of education on informal sector employment, I needed to appreciate the educational system that these workers come from.

Pupils in the poorest three quartiles of the South African schooling system do not have adequate grade level numeracy and literacy skills (Spaull 2013). These deficits are carried through to the further education and training (FET) phase where the students either leave school or have multiple grade repetitions. Only a few students manage to obtain their matric certificate, which is beneficial for job search in the formal sector (Branson, Hofmeyr and Lam 2014). Leaving school before matric sets job seekers on a difficult path; they are more likely to remain unemployed than to find employment in the formal sector.

Women have made progress with regard to their schooling and labour outcomes, despite the difficulties associated with advancing one's education level. The improvements have made it possible for women to take advantage of the public expansion of nurses, teachers and social workers. This progress has substantial rewards. According to Branson and Leibbrandt (2013), the wage premium for incomplete secondary education in 2010 was about twice as much as for primary schooling and the premium for tertiary education was about ten times as much. So perhaps the stagnation of informal sector employment has been a consequence of the increased access to the formal sector.

Women who work in the informal sector are most likely to enter industries in which they cannot fully use their schooling to expand their businesses. Furthermore, because of the nature of informality in industries such as retail – of which a large proportion is in the survivalist sector

– women are less likely to find it appealing as the economy recovers and their level of education improves. Vocational education has been unsuccessful in providing the necessary apprenticeship that would prepare its leaners for entry into more growth-oriented parts of the informal sector such as construction and metalwork.

If the accumulation of human capital through education provides insufficient explanation for the gender divergence in informal sector employment, then maybe the social norms that have a direct impact on women will.

3.2.3.c. Proposition 3: Social norms and financial safety nets in households

Household structures coupled with gendered roles of caregiving show up in the labour market outcomes of women (Kimmel and Connelly 2006; Lund 1998). In Section 4.5 it is shown that women who live in households that have children spend less time on job search activities. Women that find themselves in these circumstances are also less likely to be employed and more likely to be inactive members of the working-age population because of the responsibility of caregiving that falls on them. Budlender and Lund (2011) found that, on average, men reported spending less time taking care of other persons in the household than women do, while women spend a disproportionately longer time taking care of children.

Some progress has been made in aiding working-age women with childcare responsibilities through the provision of early childhood development. There has been an expansion of early childhood development services as a part of the expanded public works programme (Budlender and Lund 2011) and of Grade R in basic education. Although the intention behind grade R was to give children access to pre-school to improve outcomes in the coming foundation phase, Spaull (2013) found that the additional year did little to advance children from poor schools. Both Grade R and early childhood development centres effectively became forms of caregiving for children, which may have a positive effect on the women's ability to dedicate their time to the labour market.

This relaxation of the time constraints on women is available to women who can afford to send their children to early childhood development centres. Those who cannot afford this service have to negotiate the hours spent on work and childcare throughout the day, with the effect of drawing women away from employment. If, however, poorer women found a way of sharing childcare responsibilities and circumstances in their household were such that they had to earn some form of income to provide for their family, we would see the opposite effect. These women may be pushed to working in the relatively easy-entry segment of the informal sector.

Households with older people are more likely to ease the caretaking responsibilities of women. Posel et al. (2006) found that grandparents who benefit from the state-provided old-age pension have been very helpful to female employment. This pension, along with the child-support grant, has provided much needed relief to poor households – this relief could be enough to remove the need to work in survivalist enterprises for many women.

The effect of caregiving gender roles and household structure on labour market outcomes have mixed results in the literature. The inability to access early childhood development centres coupled with bearing the responsibility of childcare pulls women away from the labour market (Budlender and Lund 2011). On the other hand, I found that poor women might be forced into survivalist enterprises to contribute to the household's finances (see Section 2.5.4). If women can distribute childcare responsibilities with other household members, they may be able to dedicate enough time and resources to finding employment.

Although the accumulation of human capital is vital in the labour market, omitting the effects of social norms in the household ignores an essential component of female labour market outcomes. The household structure can generate both push and pull factors; the results tend to be ambiguous. A clearer pattern emerges when I consider how the various industries have performed since the financial crisis.

3.3. Data description

This chapter will use the QLFS, conducted quarterly between 2008 and 2015 by StatsSA, to answer the research question. The QLFS uses a two-stage stratification procedure. In the first stage, PSUs are sampled with probability proportional to the size of the PSUs. In the second stage, the dwelling units are systematically sampled from the PSUs. The PSUs are divided into four numbered rotation groups and each set of dwellings are rotated out of the sample in the quarter that corresponds to their group number. This creates a rotating panel so that a dwelling can be in the sample for a maximum of four consecutive waves.

Most of the analysis will compare those employed in the informal sector and the broadly unemployed. Studies have shown that the most appropriate definition of unemployment in South Africa includes discouraged work-seekers because this group has given up on searching rather than voluntarily opted out of the labour force (Kingdon and Knight 2004; Kingdon and Knight 2007; Banerjee et al. 2008).

A labourer is employed in the informal sector if the firm is not registered for value-added tax (VAT) or income tax and employs five or fewer people. These restrictions correspond to recommendations made at the 17th International Conference on Labour Statistics regarding the definition of the informal sector (Hussmanns 2004). Technically, domestic workers do not form a part of the informal sector because they are own-account workers who are employed by households. Subsistence and small-scale agricultural workers are also excluded from informal sector workers. To be clear, I am using the enterprise-based definition of the informal sector which should not be confused with that of informal employment, which consists of formal-sector workers (including farm workers) in precarious employment, domestic workers and informal sector workers (Hussmanns 2004).

This paper aims to explain changes in the informal sector induced by changes in the business cycle. The business cycle is represented by the official annual value-added GDP[10] estimates from StatsSA. The inclusion of this time series indicator to the cross-sectional panel data introduces a lack of variation in the explanatory variable beyond the time dimension that necessitates clustering the standard errors by waves.

The variables of interest used to test the three propositions are all measured in the QLFS. The years of education obtained variable is directly derived from the QLFS question on highest level of education completed. People who have had no schooling and grade R are placed in the same category since the marginal gains of being in this grade are so low in the labour market. The sequential grades in the foundation phase have been left unchanged. In the FET stage, 10-12 years of schooling represent either Grades 10 to 12 or NTC 1 to 3. Any other certificate or diploma that is attained before either NSC or NCV is assigned to 11 years of schooling. This is because the completion of the FET stage represents a pivotal point in an individual's labour market outcomes.

In the second proposition, I introduce the household variables where membership is disaggregated into age-related categories: children who are 18 years and younger, the elderly who are 60 years and older, and prime-age adults. The grant income that households receive is also included in this proposition. Old-age pensions and child-supports grant have changed over the years and the data was modified to reflect this. In 2008, only children who were 14 years and younger were be eligible for child-support grants, and old-age pension eligibility was different for women (60 years and older) and men (65 years and older). Both grants were expanded in 2009; children could now be beneficiaries up to the age of 15 and the old-age pension threshold was equalised at age 60. Child-support grant eligibility age was changed

[10] This measure excludes production in the agricultural industry.

again in 2011, when all children who were 18 years or younger could be beneficiaries. The data was amended to reflect these increments in the household's grant income.

I must note that the question of whether the household received any grants was not asked to employed people. A household that receives grants will be correctly identified in my analysis if it has at least one jobless person. The only households that I will miss are the ones where all household members are employed.

In the third proposition, I divert my attention from the control variables to the dependant variable, where the informal sector is disaggregated by its industries. The industry variable is used with very little modifications; the mining and quarrying, and electricity industries are omitted because of the low number of informal sector workers.

This data is used to explain the gender dimension in a macroeconomic and microeconomic sense. At the macroeconomic level, I measure the total informal sector employment's response to the GDP. At the microeconomic level, I measure the probability of informal sector employment and test the three propositions that explain the gender divergence. The method used for this analysis is explained in detail in the following section.

3.4. Methodology

Our approach in estimating the causes for the gender divergence rests on my ability to find explanations for why female employment elasticity is statistically significantly different from male employment elasticity in the informal sector. Therefore, one of my core equations of interest take the form:

$$LogE_t = \alpha + \beta LogY_t + u_t \quad (1)$$

for each of the sexes in the macroeconomic context where E_t represents the total number of informal sector workers at time *t* and Y_t represents the GDP at time *t*. The other equation of interest is:

$$P(Inf|t,D) = \delta_0 + \delta_1 Log\left(\frac{Y_t}{Y_0}\right) + \delta_2 D + \delta_3 Log\left(\frac{Y_t}{Y_0}\right) * D \quad (2)$$

in the microeconomic context where $D = 1(Women)$ is the explicit gender component.

A necessary part of the results section is empirically verifying the research question. This is done within the macroeconomic context by using time series techniques. Following from Equation 1, I regress the GDP with total employment. Both the GDP and total employment have unit roots. To ensure that my results are not subject to spurious correlation, I cointegrate the variables and display the short-run and long-run effects of the GDP on employment.

Once I have verified the existence of the gender divergence at a macroeconomic level, I explain the divergence with three hypotheses at a microeconomic level. At this point I will be using Equation 2, where I model the probability of informal employment. Since the GDP has only one dimension (aggregated per wave) and the other variables have two dimensions (individuals and waves), I account for heteroscedasticity in the errors. I do this by clustering the errors in waves for my estimation.

Equation 1 is derived from understanding that informal sector jobs are affected by the economy's performance through the employment elasticity.

$$LogE_t = \alpha + \beta LogY_t + u_t$$

$$LogE_t = LogE_{t-1} + \beta(LogY_t - LogY_{t-1}) + (u_t - u_{t-1})$$

I assume that the economy has been growing at a constant rate where $LogY_t - LogY_{t-1} = Log\left(\frac{Y_t}{Y_{t-1}}\right) = g \;\; \forall\, t \in \mathbb{R}$ and that the intertemporal difference between the errors is

approximately zero $u_t - u_{t-1} \cong 0 \; \forall \; t \in \mathbb{R}$. Using recursive calculations, I can express employment at time *t* as a function of past employment ($LogE_t \cong LogE_{t-1} + \beta g$) and I can retrace employment patterns to the beginning of the period where:

$$\therefore LogE_t \cong LogE_0 + \beta t g$$

If I focus on the first period ($t = 1$), I can find the magnitude of change in employment ($E_0 - E_1$). Employment at the end of the first period is a function of initial employment (E_0) at the beginning of the study as well as the growth rate of employment (βg).

$$LogE_1 \cong LogE_0 + \beta g$$

Using the above equation, I learn that the change in employment is approximately equal to the product of the initial employment and the growth rate of employment.

$$E_1 - E_0 \cong E_0 \beta g \qquad \because \; Log\left(\frac{E_1}{E_0}\right) \approx \frac{E_1}{E_0} - 1$$

The probability of finding employment in the informal sector (Inf) is equal to the proportion of the employed in the sector in the labour force, which can also be expressed in terms of past proportions as:

$$P(Inf|t) = \frac{E_t}{L_t} = \frac{E_{t-1}}{L_{t-1}} + \left(\frac{E_t}{L_t} - \frac{E_{t-1}}{L_{t-1}}\right)$$

I assume that the intertemporal change in the probability of informal sector employment is constant. That is $\Delta P(Inf) = \left(\frac{E_t}{L_t} - \frac{E_{t-1}}{L_{t-1}}\right)$ is constant for all $t \in \mathbb{R}$. This allows us to express the probability of informal sector employment at any time *t* in terms of the initial probability of informal sector employment and the sum of the incremental changes over the period:

$$P(Inf|t) = \frac{E_0}{L_0} + t \times \Delta P(Inf)$$

At the end of the first period, the probability of employment in the informal sector is a function of the initial probability of employment and the intertemporal change in employment:

$$P(Inf|t) = \frac{E_0}{L_0} + \left(\frac{E_1}{L_1} - \frac{E_0}{L_0}\right)$$

I assume a constant labour force in the period of study $L_t = L \quad \forall \quad t \in \mathbb{R}$

so that $\Delta P(Inf) = \frac{E_1 - E_0}{L} \cong \frac{E_0 \beta g}{L}$

So that the probability of informal sector employment at any time *t* is:

$$P(Inf|t) = \frac{E_0}{L} + t \times \frac{E_0 \beta g}{L}$$

Let $\frac{E_0}{L} = \delta_0$, $\frac{E_0 \beta}{L} = \delta_1$ so that the employment elasticity can be expressed as $\beta = \frac{\delta_1}{\delta_0}$. Let the term tg be expressed as the difference between the logged GDP from the beginning to the end of the study period $(LogY_t - LogY_0)$ because it is the sum of the incremental changes of the GDP for the study period. By making these changes, I can simply express the probability of informal sector employment as:

$$P(Inf|t) = \delta_0 + \delta_1 Log\left(\frac{Y_t}{Y_0}\right)$$

If I want to learn about the different ways in which female and male informal sector employment are affected by changes in the economy, I need to add an explicit gender component $D = 1(Women)$ to the probability of informal sector employment:

$$P(Inf|t, D) = \delta_0 + \delta_1 Log\left(\frac{Y_t}{Y_0}\right) + \delta_2 D + \delta_3 Log\left(\frac{Y_t}{Y_0}\right) * D \qquad (3)$$

so that the probability that a man will be employed in the informal sector is:

$$P(Inf|t, D = 0) = \delta_0 + \delta_1 Log\left(\frac{Y_t}{Y_0}\right)$$

and the probability that a woman will be employed in the informal sector is:

$$P(Inf|t, D = 1) = (\delta_0 + \delta_2) + (\delta_1 + \delta_3)\ Log\left(\frac{Y_t}{Y_0}\right)$$

which can be expressed in terms of the initial probability of employment and the intertemporal changes in employment as:

$$P(Inf|t, D) = \frac{E_0^i}{L^i} + t \times \frac{E_0^i \beta^i g}{L^i} \qquad where\ \ i = \begin{cases} M & if\ \ D = 0 \\ W & if\ \ D = 1 \end{cases}$$

So that $\delta_0 = \frac{E_0^M}{L^M}$, $\delta_1 = \frac{E_0^M \beta^M}{L^M}$ and men's employment elasticity i$\beta^M = \frac{\delta_1}{\delta_0}$s. For women, I have $(\delta_0 + \delta_2) = \frac{E_0^W}{L^W}$, $(\delta_1 + \delta_3) = \frac{E_0^W \beta^W}{L^W}$ and women's employment elasticity is $\beta^W = \frac{\delta_1 + \delta_3}{\delta_0 + \delta_2}$.

In this chapter, I focus on finding the determinants of the gender divergence which became more pronounced in the post-financial crisis period. This divergence can be studied by monitoring the δ_3 parameter in Equation 3; if this parameter is statistically significant, then the divergence does indeed exist.

In our first attempt at explaining the divergence, I disaggregate it at the industry level. Some industries created more jobs than others as the economy recovered. I believe that the divergence was caused either by the underrepresentation of women in these industries or because women did not have particularly favourable employment growth in industries where women have better representation. To analyse this proposition, I use the Oaxaca-Blinder decomposition of the gender divergence. This technique will indicate which part of the divergence is due to initial gender composition of employment in each industry and which is due to the different employment elasticities that women and men face in each industry.

The gender divergence parameter can be expressed in terms of the intertemporal changes in the probability of employment. I can disaggregate the probability of informal sector employment at an industry level by recognising that the workers in the sector have jobs in mutually exclusive

industries. Therefore, I can use the law of total probability to disaggregate total probability into industries $P(Inf|t,D) = \sum_j P(Inf\ and\ Indus = j|t,D)$. Similarly, I can disaggregate the change in intertemporal probability of employment into industries $\Delta P(Inf|t,D) = \sum_j \Delta P\big(Inf\ and\ Indus = j \,\big|\, t,D\big)$.

The gender divergence emerged because male informal sector employment outpaced female informal sector employment, which can be expressed as the difference of the intertemporal change in the probability of women and men:

$$\Delta P(Inf|t,D=0) - \Delta P(Inf|t,D=1) = \sum_j [\Delta P(Inf\ and\ Indus = j|t,D=0) - \Delta P(Inf\ and\ Indus = j|t,D=1)]$$

$$\Delta P(Inf|t,D=0) - \Delta P(Inf|t,D=1) = \sum_j \left[\frac{E_{0j}^M \beta_j^M g}{L_j^M} - \frac{E_{0j}^W \beta_j^W g}{L_j^W}\right]$$

I subtract the counterfactual of women's intertemporal change (if they had the same employment elasticity as a man) from the male intertemporal change. I then add the same counterfactual to the female intertemporal change.

$$\Delta P(Inf|t,D=0) - \Delta P(Inf|t,D=1) = \sum_j \left[\frac{E_{0j}^M \beta_j^M g}{L_j^M} - \frac{E_{0j}^W \beta_j^M g}{L_j^W} + \frac{E_{0j}^W \beta_j^M g}{L_j^W} - \frac{E_{0j}^W \beta_j^W g}{L_j^W}\right]$$

$$\Delta P(Inf|t,D=0) - \Delta P(Inf|t,D=1) = g \sum_j \left[\left(\frac{E_{0j}^M}{L_j^M} - \frac{E_{0j}^W}{L_j^W}\right)\beta_j^M + \frac{E_{0j}^W}{L_j^W}\left(\beta_j^M - \beta_j^W\right)\right]$$

Where $\left(\frac{E_{0j}^M}{L_j^M} - \frac{E_{0j}^W}{L_j^W}\right)\beta_j^M$ represents the contribution of the initial gender distribution in each industry to the divergence and $\frac{E_{0j}^W}{L_j^W}\left(\beta_j^M - \beta_j^W\right)$ represents the contribution of the employment elasticities to the divergence. I can use the parameters from Equation 3 to compute the distribution and elasticity effects of the gender divergence:

Where total divergence is: $\frac{E_{0j}^{M}\beta_j^{M}}{L_j^{M}} - \frac{E_{0j}^{W}\beta_j^{W}}{L_j^{W}} = -\delta_3$;

The gender distribution effect is: $\left(\frac{E_{0j}^{M}}{L_j^{M}} - \frac{E_{0j}^{W}}{L_j^{W}}\right)\beta_j^{M} = -\delta_2(\frac{\delta_1}{\delta_0})$;

And the elasticity effect is: $\frac{E_{0j}^{W}}{L_j^{W}}\left(\beta_j^{M} - \beta_j^{W}\right) = \delta_2\left(\frac{\delta_1}{\delta_0}\right) - \delta_3$.

Disaggregating the gender divergence will help us determine which industries were instrumental in increasing the gap between total female and male informal sector employment. Extending this information with an Oaxaca-Blinder decomposition will indicate whether the divergence in each industry was mainly caused by an initially skew gender distribution or by differences in how each industry responded to the changes in GDP by employing workers of different genders.

Once I gain some information about how much of the gender divergence was caused by employment elasticity, I propose two more hypotheses that explain why women may not have been able to benefit as much as men from the improvements in the economy. One pertains to human capital endowments of job seekers and the way in which this barrier to entry is not equally restrictive to women and men who want to enter the informal sector. The other hypothesis relates to household formation and how, depending on one's gender, the social norms and financial safety nets within the household have a different impact on one's labour market outcomes.

I test whether the gender equalisation of schooling has been effective in improving women's probability of finding jobs in the informal sector. Here I follow the basic Mincerian model with quadratic functions of education and age interacted with the gender component. I shift from using potential experience (age - education - 6 years) because this is a poor proxy for experience in a country with high open and long-term unemployment and estimate the equation with the

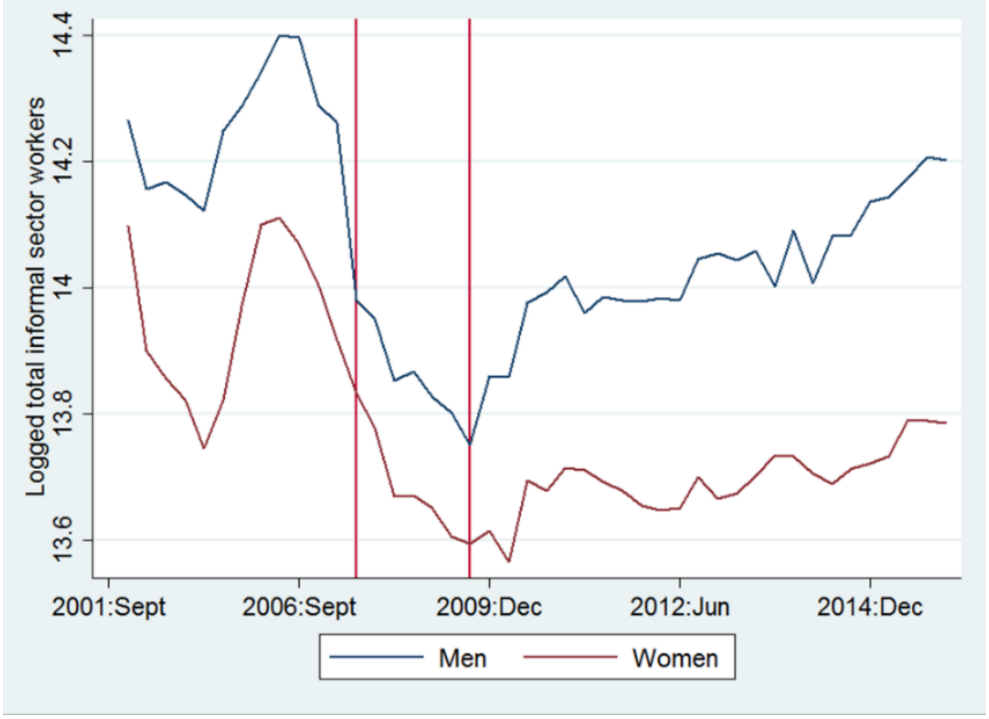
age. By using age, I should acknowledge that I are not necessarily controlling for experience but for all the out-of-school learning and the changing expectations that come with growing older. I also control for race and province because education outcomes are highly correlated to these variables.

Finally, I test the effect that social norms and financial safety nets from the household have on the probability of informal sector employment. In this section, I expand the probability model in Equation 3 by adding not only the Mincerian equation but also variables that reflect household structure and state-funded grants. The household is broken down into the elderly (older than 59 years), prime-age adults (19 to 59 years old) and children (younger than 19 years) and the grants are the old-age pension and the child-support grant. The methods that I employ to test the three hypotheses should lead us to empirically sound results that explain what seems to be a growing gender inequality with the informal sector.

3.5. Results

Because the period of study starts in 2008, which was also the onset of the financial crisis, I may have inadvertently given the impression that the Great Recession created a structural break in informal employment. This was not necessarily the case; a decline had already taken place prior to the crisis (as I see in Figure 3–1). This chapter, however, focuses on what happened to employment from the recession period onwards; a divergence between the sexes emerged. Male employment outpaced the growth of female employment in the informal sector. This gap has been sustained for the full sample period from 2008 to 2015.

Figure 3–1: Total informal sector workers from September 2001 to December 2015



The informal sector in South Africa seems to be procyclical. Empirically, this is evident from the positive correlation between employment and GDP. I also know that this assertion is not based on spurious correlation because informal sector employment and the GDP are cointegrated, as is shown in Table 3-1.

Table 3-1: Error correction model of informal sector employment and GDP

	Δ_t *Informal sector employment*		
	All	Women	Men
Error correction term	-0.428*	-0.461**	-0.468*
	(-2.66)	(-3.06)	(-2.66)
$\Delta_t Logged\ GDP$	-0.402	-0.285	-0.487
	(-1.76)	(-1.31)	(-1.74)
Constant	0.004	-0.002	0.008
	(0.61)	(-0.24)	(0.98)
Test for cointegration			
Z(t)	-4.000*	-4.208**	-3.748*

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. t-statistics in parentheses.
MacKinnon (2010) critical values: -4.863 (1%), -4.100 (5%), -3.732(10%)

These are regressions on total informal sector employment. The error correction model has been estimated with a trend term.

With the cointegration test, I have shown that there is (at least) a Granger causal relationship between total informal sector employment and GDP. In Table 3-1, I see that it takes the informal sector about 7 months to return to its equilibrium when there has been a disturbance in GDP. Checking the adjustment rates of the error correction term according to gender, I see that women return to equilibrium at a similar rate as men. This indicates that the gender divergence is not caused by how quickly employment responds to shocks in GDP. Perhaps the long-term relationship between informal sector employment and GDP, shown in Table 3-2, gives us a better indication of the reason behind the gender divergence.

Table 3-2: Engle-Granger first-step regression

	All	Women	Men
Logged GDP	0. 776*	0. 619	0. 887*
	(1.71)	(1.30)	(1.86)
Trend	0.003	-0.001	0.006*
	(1.06)	(-0.32)	(2.01)
Constant	4.144	5.443	2.060
	(0.69)	(0.86)	(0.32)

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses.
These are regressions on total informal sector employment.

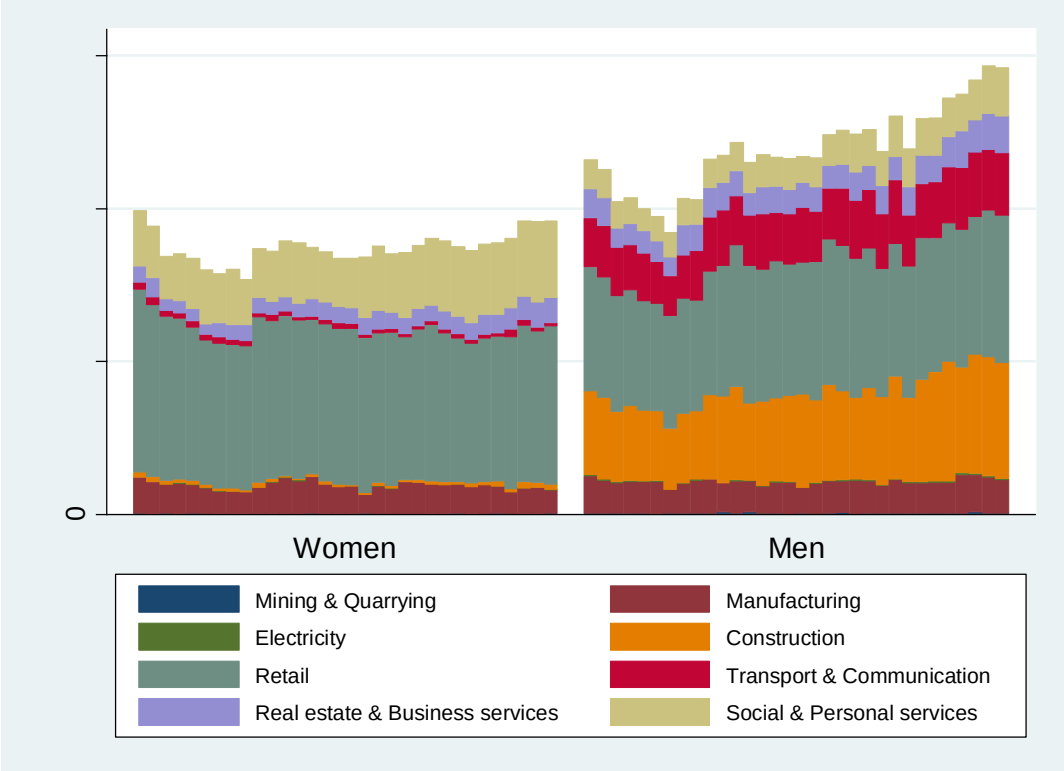
In the long run, an increase in GDP leads to a positive and significant effect on male informal sector employment. The same cannot be said for female informal sector employment. Table 3-2 indicates that the strength of this relationship is muted for women because growth in female informal sector employment has not been statistically significant. In the next section, I

investigate how much of the lower female informal sector employment growth is due to the skewed gender distribution in highly elastic industries and how much is due to unequal employment elasticities in industries that have a higher proportion of women.

3.5.1. Proposition 1: Industries

The gender proportions within industries is often skewed towards women participating in more socially productive sectors and men in more physically productive sectors. These patterns are likely to persist in the absence of intervention. Figure 3–2 illustrates this point. At the beginning of the period, the allocation of informal sector jobs for women did not mirror the job allocations for men and this was the case throughout the study.

Figure 3–2: Total informal sector employment by industry



The objective with this proposition is to show that the variations in the gender distribution within industries have significantly contributed to the divergence. In Figure 3–2, I see that

women are concentrated in the retail industry, with smaller proportions of women working in manufacturing or social services. Men, on the other hand, have spread their activities to construction and transport in addition to the three industries in which female employment is clustered (retail, manufacturing and social services).

I investigate the proposition's validity by disaggregating the gender divergence at industry level. I then decompose each industry's contribution to the gender divergence into two components. One component reflects the initial proportion of women and men in each industry. The other component compares women's employment progression based on the female employment elasticity to their progression had they experienced the same elasticity as men. This analysis will indicate which industries contributed most to the divergence, and whether the initial proportion in each industry was the problem or whether there were disproportionate advantages for male informal sector employment as the economy recovered.

Table 3-3 indicate that social services and construction were the industries with the highest percentage gains with the improvements in the economy. Construction is a male-dominated industry, which means that women are set to have lower gains from any increase of jobs in this sector. Social services have higher proportions of women workers, so it is encouraging to see that this is the industry with the highest elasticity. The social services category is a collection of education, health, social work and hairdressing. The expansion of small-scale private care such as early childhood development centres would reflect in the employment numbers in this industry. It will be interesting to see whether women were able to take advantage of the more favourable proportion in this industry.

Employment in the other industries did not significantly improve as the economy recovered, so I do not expect those industries to have caused a shift in gender distribution within the informal sector. The insignificant elasticity in retail is worrying considering that most of female

informal sector employment is concentrated in this industry. This means that I shouldn't expect this sector to play a large role in changing the gender divergence.

Table 3-3: Linear regressions of total employment in the informal sector and its industries

	Informal	Construction	Social	Retail	Manufacturing
Logged GDP	0.478	1.558*	1.775**	-0.141	-0.496
	(0.31)	(0.60)	(0.58)	(0.29)	(0.57)
Logged WAP†	0.466**	0.690*	0.591	0.345*	0.308
	(0.17)	(0.33)	(0.32)	(0.15)	(0.31)
Constant	6.004	-11.405	-13.852*	14.030***	17.392*
	(3.50)	(6.75)	(6.57)	(3.22)	(6.39)
R^2	0.706	0.742	0.758	0.314	0.033
Observations	32	32	32	32	32

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses.

Table 3-3 (cont.): Linear regressions of total employment in the informal sector and its industries

	Business	Utilities	Mining	Transport
Logged GDP	0.297	5.278	-0.345	0.217
	(0.79)	(4.24)	(4.51)	(0.48)
Logged WAP†	1.119*	-2.636	1.687	0.598*
	(0.43)	(2.30)	(2.44)	(0.26)
Constant	2.696	-50.770	4.186	6.474
	(8.87)	(47.76)	(50.77)	(5.38)
R^2	0.547	0.051	0.051	0.504
Observations	32	32	32	32

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses.
†WAP: Working-age population

In Table 3-4: Decomposition , I present the results of the decomposition of the gender divergence. The total divergence is positive because it is stated as a difference between male and female employment, where men had more jobs in the informal sector. A negative sign in the decomposition signals the cases where women had a larger effect on the components. For example, the gap in informal sector employment for men and women was about 15%. Once I disaggregate this divergence by industry, I learnt that the main contributors to the divergence were construction, social services, and retail.

Based on the decomposition results of the construction industry, most of the divergence exists because of the male dominance in construction. In fact, the divergence would have been larger had women's elasticity not been higher than men's elasticity. The social services industry helped in reducing the gender divergence. The decomposition shows us that women in this industry were able to take advantage of the improving economy. Female informal sector employment grew at a higher rate than male employment, so the elasticity component was much larger than the distribution component. Although the gains made by women reduced the gender divergence, this was not enough to remove the gap created by the construction industry, which was about twice the size of the gap created by the social services industry. Lastly, the retail industry had a large contribution towards widening the gender divergence. The growth of employment in this industry was far more favourable for men than it was for women. Having larger female representation did not do enough to reduce men's advantage in this industry. The rest of the industries had a small and insignificant contribution to the gender gap.

Table 3-4: Decomposition of the expectation of employment in the informal sector for women and men

	Informal	Construction	Social	Retail	Manufacturing
Women	-0.062***	-0.060***	0.018***	0.029***	0.001
	(-12.57)	(-28.27)	(8.80)	(7.96)	(0.51)
Logged GDP	0.229***	0.105***	-0.002	0.139***	0.024
	(4.24)	(3.92)	(-0.07)	(3.65)	(1.28)
Women*Logged GDP	-0.154***	-0.090***	0.047**	-0.109***	-0.024
	(-3.69)	(-4.83)	(2.58)	(-3.60)	(-1.68)
Constant	0.318***	0.063***	0.012**	0.151***	0.035***
	(33.75)	(14.01)	(3.00)	(22.16)	(10.70)
Total divergence	0.154	0.090	-0.047	0.109	0.024
Distribution effect	0.044	0.101	0.002	-0.030	-0.001
Elasticity effect	0.110	-0.011	-0.049	0.136	0.025

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses.

Table 3-4 (cont.): Decomposition of the expectation of employment in the informal sector for women and men

	Business	Electricity	Mining	Transport
Women	-0.009***	-0.000	-0.001*	-0.039***
	(-5.88)	(-1.03)	(-2.05)	(-22.20)
Logged GDP	-0.030	-0.001	-0.001	-0.006
	(-1.81)	(-0.53)	(-0.28)	(-0.28)
Women*Logged GDP	0.022	-0.002	0.002	0.001
	(1.66)	(-1.20)	(0.92)	(0.05)
Constant	0.013***	-0.000	0.001	0.044***
	(4.54)	(-0.86)	(1.26)	(12.78)
Total divergence	-0.022	0.002	-0.002	< |-0.001|
Gender distribution effect	-0.020	< 0.001	< |-0.001|	-0.005
Elasticity effect	-0.002	0.001	-0.001	0.005

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses.

From combining the results from the total employment elasticities (see Table 3-3) and the decompositions (see Table 3-4: Decomposition), I learn that the construction and social services industries were the largest contributors to the gender divergence. Although the total employment elasticity was muted in retail, I saw that the economic recovery was to the benefit of male employment in this industry.

To explain why women could not take advantage of the improvements in employment opportunities, I examined the effects of human capital and social norms on informal sector employment. The basic model in Table 3-4 reiterates that women have a lower initial probability of entering the informal sector. People have a higher probability of entering the informal sector as GDP increases and the interaction term shows us that this growth is lower for women than it is for men. This is how the divergence is formed. The interaction term identifies the gender divergence and I will be tracking its magnitude and statistical significance for Propositions 2 and 3.

Table 3-4: Probit models of the probability of informal sector employment by gender

	Basic model	Basic model•	Proposition 2	Proposition 3
Women	-0.192***	-0.198***	0.427***	-0.329***
	(-25.53)	(-23.48)	(6.47)	(-14.17)
Logged GDP	0.705**	0.707**	0.625*	2.829*
	(2.87)	(2.86)	(2.30)	(2.14)
Women*Logged GDP	-0.527***	-0.526***	-0.563***	-0.388
	(-6.14)	(-5.45)	(-5.79)	(-1.87)
Education			0.032***	0.032***
			(6.11)	(8.42)
Education squared			-0.002***	-0.003***
			(-8.16)	(-11.72)
Women*Education			-0.018*	
			(-2.47)	
Women*Education squared			0.002***	
			(4.56)	
Age			0.101***	0.057***
			(36.97)	(22.33)
Age squared			-0.001***	-0.000***
			(-26.42)	(-9.85)
Women*Age			-0.053***	
			(-14.29)	
Women*Age squared			0.001***	
			(17.61)	
Coloured		-0.099***	-0.093***	-0.047
		(-4.63)	(-3.84)	(-1.48)
Indian		0.332***	0.289***	0.140***
		(11.14)	(8.32)	(4.38)
White		0.519***	0.404***	0.225***
		(23.58)	(19.44)	(7.41)
Logged CSG‡				-0.082***
				(-46.30)
Logged OAP‡				0.016***
				(8.56)
Women*Logged CSG‡				0.050***
				(14.25)
Women*Logged OAP‡				0.004
				(0.23)
Children				-0.009
				(-0.70)
Older persons				0.259***
				(23.76)
Adults				-0.014***
				(-5.58)
Cohabit				-0.021***
				(-8.27)

Constant	-0.472***	-0.469***	-2.706***	-2.332***
	(-8.36)	(-7.83)	(-29.34)	(-10.95)
Observations	307 723	307 723	298 466	277 762

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses. Regressions conducted on the period beginning on the first quarter of 2010 to the fourth quarter of 2015.
†Controlled for the working-age population
‡CSG: child-support grant; OAP: old-age pension

3.5.2. Proposition 2: Human capital

Proposition 2 asserts that improvements in education for women has affected their probability of entering the informal sector as the economy improved. To test this, I add the Mincerian function with gender interactions to the basic model. After controlling for human capital features, I see that the probability of employment improved for women. However, the likelihood of male employment still outpaced the probability of female employment as GDP increased.

Figure 3–3: Predictive margins of informal sector employment on GDP

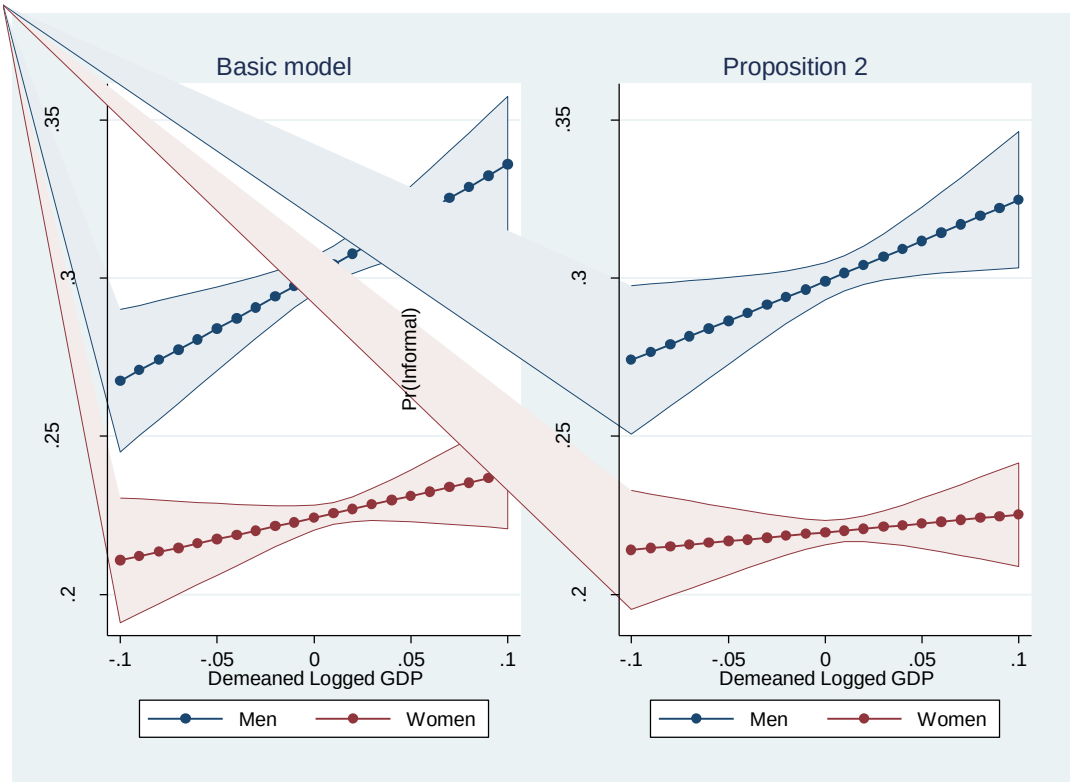
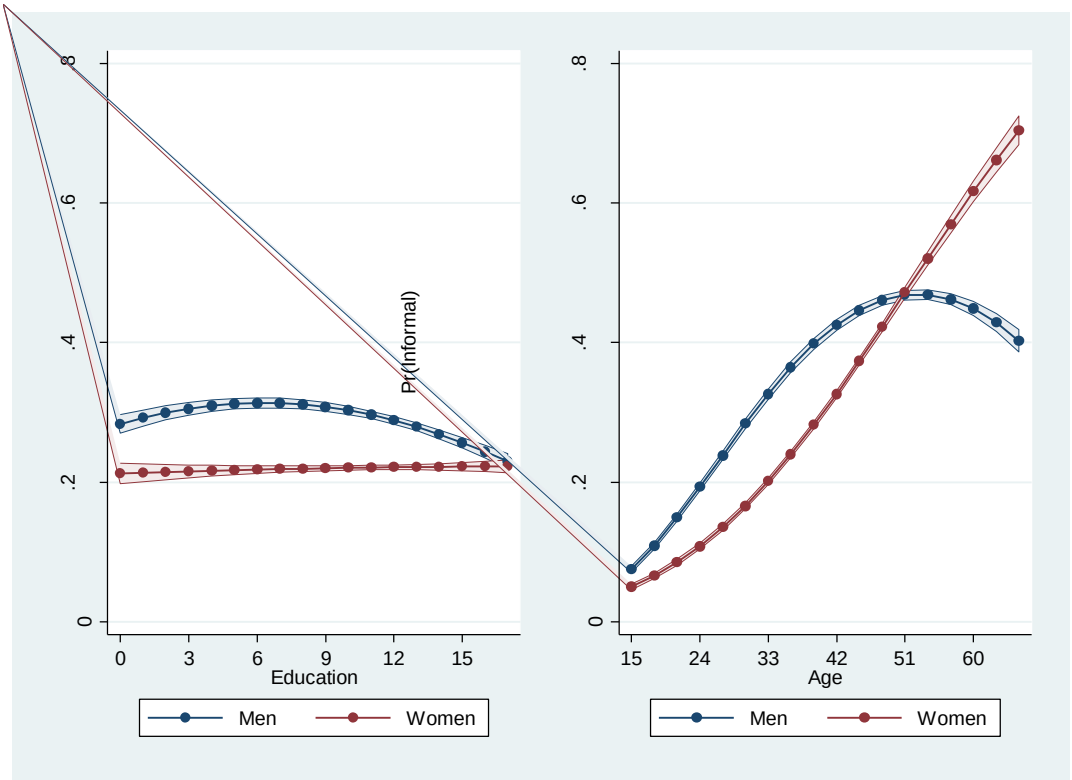


Figure 3–3 shows that people are less likely to stay unemployed as they grow older or attain higher levels of schooling. Regarding both factors, namely education and age, women initially have a lower probability of employment than men, as shown in Figure 3–3. Initially, the probability of male informal sector employment increases with more years of schooling. This effect starts to decline after a man completes primary school until it converges with the probability of female informal sector employment. For women, however, the probability of working in the informal sector neither improves nor declines with higher levels of education. Therefore, it seems that any changes in the levels of schooling attained by women has not had a significant impact on the probability of informal sector employment.

Figure 3–4: Predictive margins of informal sector employment on education and age



Younger people are less likely to find employment in the informal sector. As they grow older, the probability of employment increases. When viewing this probability from the gender

perspective, I see that it converges. Age has a convex relationship with informal sector employment for women and a concave one for men. So, while younger men have a higher probability of working in the informal sector than younger women, older women are more likely to work in the informal sector than older men.

Some of the gender gap can be explained by the variables education, age and race. For example, Table 3-3 shows that Indian and white people are less likely to remain unemployed rather than work in the informal sector. Education does not necessarily improve the probability of informal sector employment for women. But at lower levels of schooling, the probability of male informal sector employment improves slightly. From the analysis, I see that there is a gender convergence of the probability of informal sector employment on age. However, this is an inadequate explanation for the way in which female and male informal sector employment have diverged with regard to the improvements in GDP.

Proposition 1 shows us that the industries with the most contribution to the gender divergence were construction and retail in favour of male workers, and social services in favour of female workers. The physical and psycho-social skills that are required for these industries are not captured by the schooling variable.

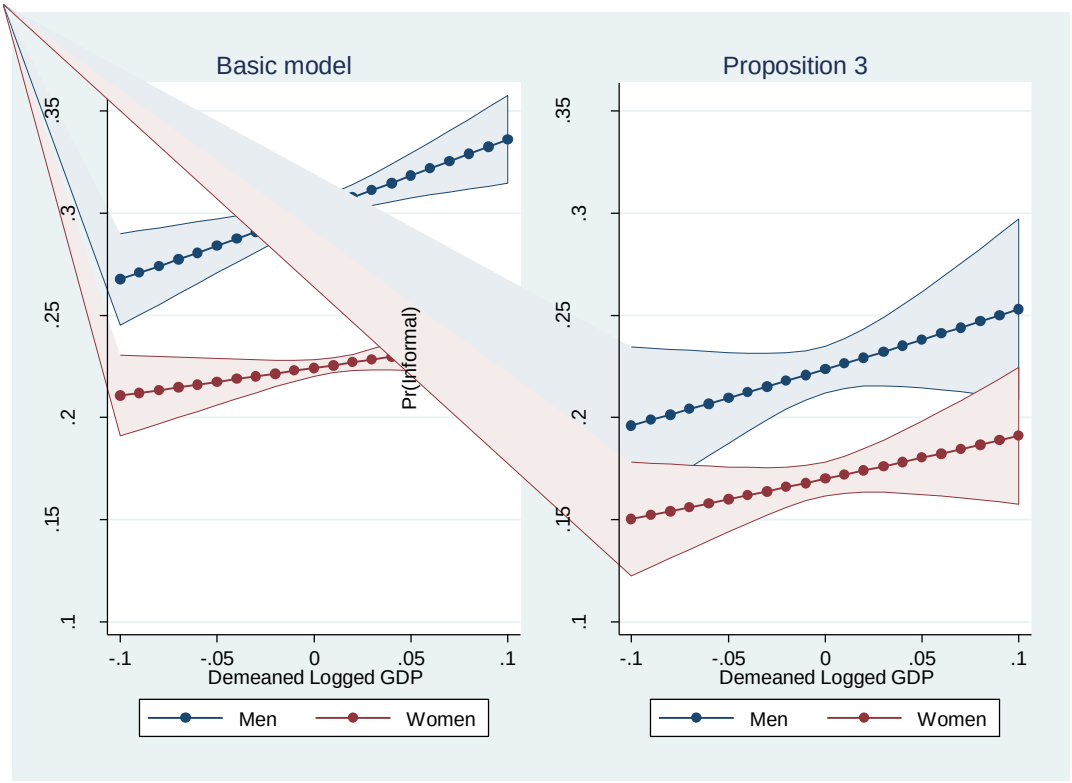
3.5.3. Proposition 3: Social norms and financial safety nets in households

Since human capital factors have not explained the gender divergence in the informal sector, I turn to household features. Proposition 3 asserts that social norms and financial safety nets within the household have had an asymmetric impact on the labour market outcomes for women and men. I test this by controlling for the household structure and grant income to the model that I see in Table 3-4. The variables used for grant income are child-support grants and old-age pension. The variables that I use to depict the household structure are the number of

children, elderly and prime-age adults that live in the same household. I also control for the possibility that the individual cohabits with their partner to capture the intrahousehold relations.

Figure 3–5: Predictive clearly illustrates the impact of controlling for household factors to analyse informal sector employment. The gender gap between the probabilities of employment is narrower in Proposition 3 and is consistent at all levels of GDP. In other words, the gender divergence in informal sector employment has been removed. In the following paragraphs, we'll discuss the household factors that contributed to the reduction of the gender divergence.

Figure 3–5: Predictive margins of informal sector employment on GDP



Unemployed people may find safety nets in households where there is at least one income provider. Because of this dependence, I find that individuals who live in larger households have a lower probability of employment. If the individual lives in a household where they cohabit with their partner, they have a higher probability of being employed. This is a sensible outcome

if I am to assume that often cohabiting partners who form their own households are also those who can afford to do so from their labour market earnings.

The number of children in the household can pull individuals out of employment if the responsibilities of care falls on them. This is if the adult who oversees childcare cannot afford to send younger children to early childhood development centres. I see this pattern when I control for the household structure without grants. Once I control for child-support grants, I find a positive relationship between the number of children in the household and the probability of employment.

The largest grants in South Africa are old-age pension (in monetary value) and child-support grants (in the number of beneficiaries). Both grants were extended in my period of study. The expansion of the child-support grant is particularly interesting because of the incremental changes over time. As the age of exclusion from the grant rose over the years, more children became beneficiaries of the grant. This increased the real total amount of income that qualifying households received.

The effect of child-support grants on the probability of employment is negative (and significant) while the coefficient on the number of children is positive (and significant). It is important to note the insignificant interaction term of women and GDP on the regression results in the third column in Table 3-4. These results provide some support for Proposition 3.

In the literature review, I discussed how childcare responsibilities drew women away from the labour market and how this was especially true for poor women who could not share these responsibilities. The household variables show us that if people live in large households where there is grant income, they are more likely to be unemployed than employed. Individuals who cohabit have a higher probability of being employed and, after I account for social grants,

children have a small positive effect on employment. Controlling for these variables seemed to explain the gender divergence.

3.6. Conclusion

In this study, I tested three propositions that could explain the growing gender gap since the South African economy began its recovery from the Great Recession. Regarding the first hypothesis, I show that industries such as construction, with a lower proportion of women, were highly elastic. This meant that female employment gains were outstripped by male gains, thus widening the divergence. The social services industry has a higher proportion of women, and women's employment elasticity was higher than men's elasticity. This industry helped to narrow the divergence, but the social services industry could not close the gap that had been created by the construction industry. The retail industry, which has a high proportion of women, had more favourable male employment elasticity, which increased the gap between male and female employment.

The next proposition I tested pertained to the role of human capital in the growing divergence. I found that although higher levels of schooling improved the employment outcomes for women, I cannot say that it helped narrow the divergence in the post-crisis period. Perhaps the improvements in educational outcomes were enough to pull women away from the adverse conditions of the survivalist tier in the informal sector but they were not enough to remove the barriers to entering the growth-oriented tier.

The last proposition tests the impact of household factors on the gender divergence. I find that state-funded grants were important in explaining the growing gap. The financial safety net provided by child-support grants may have made it possible for women to avoid being pushed into (most likely) the survivalist tier. However, I found that having children and a partner in

the household increased the probability of employment in the informal sector. Men were only less likely to work in the informal sector when they lived with beneficiaries of old-age pension. After I controlled for household formation and social grants, the gender divergence lost its significance – once again showing the importance of household factors on labour market outcomes.

When a sector that serves as employer of last resort to the vulnerable cannot provide work to poor women, I must take note. The number of women who work in the informal sector has declined since the financial crisis and has shown little sign of recovery since. If the industries that women enter do not result in growth, I need to research the reasons behind these choices and monitor the gender divergence. Also, if household factors significantly change women's employment outcomes, I should investigate whether the household has an impact at other stages of labour market participation.

4. Time allocated to active job search

4.1. Introduction

The South African labour market is characterised by striking gender inequalities, which hamper the country's capacity to grow (Klasen and Woolard 1999) and disadvantaged individuals' ability to gain upward mobility. Several studies have described such inequalities in occupational attainment, wages and unemployment (Leibbrandt, Woolard and McEwen 2010; Burger and Woolard 2005; Woolard and Klasen 2005; Casale 2004). However, if labour supply responds to low labour absorption rates, the measures we adopt for the unemployment gaps may underestimate the obstacles that women and other disadvantaged groups face when looking for work. Addressing gendered labour market outcomes requires a deeper understanding of the various determinants on female labour supply.

There are various reasons why women may be less inclined to engage in labour market work and hence have lower reservation wages, including repressive social norms, anticipated gender discrimination in hiring or wages, and engagement in household production. Empirical research often reduces the labour supply decision to a binary response to a survey question on the willingness to accept suitable jobs or engaging in active job search. In reality, labour supply is a collection of individual choices. Some job seekers search frequently and for many hours per day while others are constrained to searching infrequently and for short periods. Job seekers also differ regarding the time, place and method of searching. Active methods such as door-to-door search tend to take more time than passive methods such as connecting to social networks. Even within the class of active channels, certain activities are costlier in terms of the required investment of time, effort and emotional energy: searching from home using the internet is relatively low in cost, while travelling to a place of business to drop off applications is much costlier (Abel, Burger, Carranza and Piraino 2017). Such differences in search activity can

determine the types of job offers individuals receive and the duration of unemployment (Rankin et al. 2012). Taking this broader perspective on labour supply allows us to reflect on the various ways in which gender influences job search activities and labour market outcomes.

Furthermore, effective job search requires not only a willingness to work but also the opportunity to exercise this choice. In environments of high unemployment, chronic poverty or repressive social norms the job seeker's agency may be critical to understanding labour supply behaviour. Social norms and household obligations may curtail the opportunities to engage in effective job search. As the primary caretaker of children or the elderly, women may be unable to incur the time cost of traveling to business centres, so instead opt for shorter periods of searching closer to home.

This chapter contributes to the existing literature on the labour market by examining the gendered time constraints on the job seeker's ability to look for employment. Job search is viewed as a function of both the willingness and opportunity to search. Using the TUS, I are able to compare when, for how long and where male and female South Africans look for work. In this way, I will investigate whether scheduling constraints, due to women's obligation to be at home at certain hours of the day, has an impact on how much time men and women spend looking for work.

The chapter starts with a review of the relevant literature on the gendered nature of unemployment in South Africa and some job search theory (Section 4.2). This is followed by a description of the TUS(Section 4.3). I discuss the methods that I use for the empirical analysis (Section 4.4) before the results are presented in Section 4.5. Section 4.6 concludes the chapter.

4.2. Literature review

Gender inequalities in the labour market are ubiquitous in the distribution of occupational attainment, hours worked, wages earned, and the likelihood of unemployment. Female unemployment has been consistently high since the transition into democracy and a considerable amount of research has focused on understanding its causes. Several determinants have emerged that appear to contribute to South Africa's unemployment problem. One such factor is the spatial separation between business hubs and where the unemployed reside (Banerjee et al. 2008; Budlender and Lund 2011; Kerr 2017). This factor drives up the costs of job search, which discourages continuously seeking employment. Kerr (2017) found that transport costs form 13% of the average wage. This means that high transport costs also increase reservation wages, which makes it even more difficult to find a job that will offer a liveable wage.

Unlike other middle-income countries where people have been able to 'make' jobs closer to their homes and/or where there is less regulation, the informal sector in South Africa is small amid large-scale and open unemployment. In Chapter 2 I found that most of the informal sector consists of survivalist enterprises and despite that, this sector cannot absorb the excess labour supply. The parts of the informal sector in which there are opportunities for growth have more barriers to entry. This is part of the reason why the informal sector is struggling to grow. The lack of job opportunities in both the formal and informal sectors means that the labour absorption rate is very low and most of the unemployed are likely to endure long periods in the job queue (Leibbrandt et al. 2010b; Casale 2004; Bhorat 2004). Attaining higher levels of schooling improves the likelihood of exiting unemployment, as does more years of work experience. These features are highly correlated to gender and race and so are the chances of being employed.

The high correlation between gender and unemployment motivated extensive research on the extent of labour market discrimination. The most commonly used approach in this literature controls for observable wage or employment determinants (Oaxaca 1973; Blinder 1973), which may be attributed to productivity differences or statistical discrimination (Phelps 1972; Arrow 1972). The remaining variation in employment data can, under additional identifying restrictions, be attributed to taste discrimination (Becker 1957). The evidence indicates that there is substantial benefit to being born in the privileged racial or gender groups. This privilege operates through household factors that are conducive to labour market success, access to wealthy schools and social networks, and by placing such individuals ahead in the job queue.

The remainder of this section explores the gendering of the labour market, paying careful attention to aspects that affect unemployed women in their job-seeking efforts. The section starts with a brief discussion of the different types of joblessness and makes a case for using the broad definition of unemployment. I then proceed to review the evidence on the feminisation of the labour market in South Africa, which led to high unemployment among women, before I continue to discuss the gender disparities among the employed. I show how gender norms not only affect the types of jobs that women have but also how these may affect their job search patterns. Thereafter, I discuss the theoretical job search model, followed by a discussion of the strategies that job seekers use to look for work.

4.2.1. A case for the use of the broad definition of unemployment

Although the official rate of unemployment in South Africa is based on the narrow definition of unemployment, the broad definition is more appropriate since it includes discouraged work seekers. Kingdon and Knight (2006) argue that discouraged work seekers should be paid as much attention as the searching unemployed. From their studies, I know that the non-searching

unemployed are poorer and have lower levels of subjective well-being. Lloyd and Leibbrandt (2013) revised the research on the subjective well-being of discouraged job seekers by using an indicator at the individual level as well as a more recent dataset; they found that discouraged work seekers are actually worse off than Kingdon and Knight (2006) suggest. Regardless of this, the statistic that is used in the media is based on the narrow definition of unemployment.

The argument to exclude the non-searching unemployed is based on the notion that some of these individuals have a lack of commitment to the labour market. Transition matrices drawn by Banerjee et al. (2008) and Ranchhod and Dinkelman (2007) show that the searching unemployed have a higher probability of finding employment than the non-searching unemployed. This could serve as an indicator for absence of commitment to the labour market. Posel, Casale and Vermaak (2014) examined this hypothesis by testing whether search status influences the transition to employment. They found no evidence that the non-searching unemployed are less likely to transition into employment once individual characteristics have been controlled for. What distinguishes the searchers from the non-searchers seems to be the costs weighed against the expected benefits of active job hunting. This distinction suggests that the true difference between these two groups lies in the job search strategy instead of an indication of labour market commitment (Posel et al. 2014).

In this chapter I study how the unemployed negotiate their time for active job search and part of that is the decision to adopt active methods of search. Since lack of commitment to the labour market does not distinguish between the narrowly and broadly unemployed and the societal loss of output is the same from the discouraged and the searching unemployed (Finegan 1978), the broad definition of unemployment will be used throughout this study.

4.2.2. The feminisation of the labour force

Shortly after the democratic transition, South Africa underwent a feminisation of the labour force. What was an opportunity to change the gender distribution of employment became an effective feminisation of unemployment and precarious work (Casale 2004; Casale and Posel 2002). This was because the rapid increase in female labour supply could not be absorbed by the economy. This indicates that the surge in female participation was not because women responded to increased demand for female employees (Casale 2004) but rather as a result of a push into the job market.

A few factors are responsible for this result, such as spatial inequalities, barriers to entry into the informal sector, and perhaps an inability to keep up with a changing economy (Banerjee et al. 2008). The mismatch between the labour required by the changing economy and the skills endowment of the job seekers left many women unemployed (Casale 2004). Although education attainment had improved for women, many did not have the adequate education levels that were needed for the increasingly mechanised formal sector. Changes in policy also pushed pupils who were two years over the grade age out of schools (Burger, Van der Berg and Von Fintel 2015). Instead of the former pupils being absorbed by FET institutions, many found themselves searching for jobs with no qualifications (Branson and Leibbrandt 2013). Because of the shortage of formal-sector jobs that women encountered when they entered the labour market, many women had to look for work in the informal sector.

Another contributing factor to the feminisation of the labour force could be found in changing household structures. In the period 1995 to 1999, the rate of married women had declined and there was an increase in unemployed men (Casale and Posel 2002). These two factors could have pushed more women into the labour market. Women had to find ways of earning money for the household as they were looked to for provision or the traditional providers could not

find work. But of course, an increase in labour supply that is not coupled with an increase in demand leaves an unabsorbed surplus.

4.2.3. Gender disparities in employment

One of the most striking sources of inequality among the employed is the gender wage gap. This gap is interesting because it is supposed to convey information about the value assigned to labourers' productivity (Weiss 1995). The wage gap between women and men in South Africa is about 35.1% at the 50th percentile (Bhorat and Goga 2013). This gender wage gap is a global and persistent phenomenon. The possible differences in occupational choice would be a reasonable place to start searching for the causes behind it.

Perhaps the wage penalty for gender is caused by the fact that women are overrepresented in jobs that offer lower remuneration for their labour. In the fourth quarter of 2010, about 43.4% of the employed in South Africa were women and they were concentrated in the domestic, clerical and elementary occupations which offer low wages (Statistics South Africa 2010). In Bhorat and Goga's (2013) re-examination of the gender wage gap, they found that the gap is the largest in the lowest income percentiles. Women are overrepresented in lower paying jobs and underrepresented in higher paying jobs.

Occupational choices do not fully explain the gender wage gap. If they did, I would expect controlling for the differences between occupations to explain the gap in wages. This assertion is addressed in a study by Casale and Posel (2002), who found that the gender pay gap persists even after controlling for occupations, human capital, hours worked and unionisation. Internationally, work on understanding the wage gap has moved beyond explaining the differences between occupations to include reasons that explain the gap within occupations. According to Goldin (2014), the answer to the residual gender wage gap lies in the

remuneration structure of occupations over the worker's lifecycle. In her study, she found that some occupations have a convex remuneration structure over time while others have a more linear structure. Occupations with a convex remuneration structure have increasing wages for additional hours of work whereas linear remuneration structures pay the same amount per additional hour.

The significance of the distinction between the occupation structures is clear when considering women's fertility-related decisions. Although legislation goes a long way to protect women from losing their income when they have children, the opportunity costs of taking time off work for childrearing are still felt by women. The loss of time that could have been spent accumulating experience is compounded when the occupation has a convex remuneration structure (Goldin 2014). This contributes to the residual gender wage gap which, in turn, feeds into the persistent inequalities that I see among the employed.

The poor integration of women into the labour force is not just a South African phenomenon. Globally, there have been waves of feminisation of the labour force since the 1950s which also brought their share of inequalities. Some scholars (Parreñas 2005; Lee Badgett and Folbre 1999) argue that many of the domestic structures that exist in households replicate themselves in the labour market. As a result, many women find themselves in subordinate positions in the labour market. Most of the ties between the household and labour market outcomes are expressed through gender norms. This becomes clear when considering the roles of the provider or the nurturer in households and the types of jobs that are allocated to the people who are assigned either of these roles (Parreñas 2005). For example, nurturers are more likely to be found in occupations such as nursing, teaching, social work and other jobs that require a form of care labour.

Gender norms as institutions are rules that work towards regulating behaviour by sometimes constraining and other times providing incentives to actions (Lee Badgett and Folbre 1999). These norms play an important role in assigning a gender dimension to the allocation of nurturer and provider roles (Parreñas 2005). In the household, gender norms also have implications for the method of search. Unemployed providers, in very restrictive societies, may be expected to use most of their resources on job search activities in the hope that this will generate future income for the households (Hoang and Yeoh 2011). Nurturers, on the other hand, may be expected to substitute some of the time that would be allocated to job search activities with care responsibilities and household maintenance (Nawyn, Reosti and Gjokaj 2009). In settings where both men and women are present, I may find that women are often overrepresented in nurturing roles and underrepresented in provider roles. This too comes into play in the gender disparities of job search (Floro and Komatsu 2011).

Women are expected to do a great deal of care labour in the household. In this study, I adopt Waerness' (1984) interpretation of care labour, which refers to a type of work that requires personal attention and is generally of service to children or the elderly. Although the act of caring is not confined to nurturers, they do spend a disproportionate time of their day taking care of others in the household. So, when it comes to negotiating time to allocate to job search, the labour of care forms an important competing activity.

The domestic workload not only competes with job search as an activity, it also prevents women from travelling large distances in their search for suitable employment (Hanson and Pratt 1988). The spatial dynamics in South Africa are such that most of the unemployed live very far from economic hubs so the chances of finding employment without long travel times is small. When people who live far from potential employers and have a low probability of finding suitable employment become discouraged, they may stop searching or exit the labour force (Fischer and Nijkamp 1987). The expected costs would make it difficult to justify

continuous search. This, in turn, also decreases the probability of finding employment. By looking at the time-use data, I can take a snapshot of how unemployed people use their time for travel, job search and other competing activities. This will provide empirical support to the notion that repressive gender norms are harmful to women in the labour market.

4.2.4. Job search

In this chapter, active job search refers to direct modes of seeking employment, such as door-to-door job applications. This is perhaps one of the costlier methods of search when one considers travel expenses. The spatial planning in South Africa is such that the unemployed mostly live far away from economic hubs. A study by Kerr (2017), investigating the costs of commuting for the employed, found that the mean travel times was approximately 52.19 minutes per day in 2013, which comes at a high cost to commuters.

Another popular method of job search is through passive methods. I see this from the large portion of job matching happening through social networks. This method works well to connect the employer with the unemployed. It is beneficial to the job seeker because friends and family provide reliable information about possible job vacancies and the same networks could provide an important signal to the employer in the form of referrals for job seekers. The active and passive modes of search are not mutually exclusive. I can reasonably assume that a person who uses direct methods of job application would also rely on their social networks.

Once people have committed to searching on a day, they would allocate much time to this activity. This means that the searcher would have to schedule the best time to meet employers, the best time to travel, and negotiate this activity with other competing interests to spend enough time on job search.

Two major constraints present themselves when one considers active search. One is the decision of how much time to allocate to an activity, which is called the budget constraint, and it is made with the knowledge that one must allocate sufficient amounts of activities within the 24-hour day. The second constraint, namely scheduling, arises because time (unlike money) is not a homogeneous quantity. Hours, unlike currency, cannot be equally exchangeable. An hour at 2 pm is not the same as an hour at 2 am. There are set hours that people regularly use at similar times for their biological needs like eating and sleeping, and job search is a type of activity that can only take place at certain times of the day. For example, casual workers in search of day jobs are more likely to go to public areas in the morning where potential employers can pick them up for the day's work. This is a type of scheduling constraint (Neutens, Schwanen and Witlox 2011) that requires coordination with the prospective employer. Everybody's activities are subject to these constraints and the unemployed must negotiate their job-search with competing tasks like taking care of children before they go to school in the morning. These constraints have an impact on whether (participation), for how long (duration), and when (scheduling) job search will take place in any given day.

4.2.4.a. Job search theory

The job search model (Mortensen 1986) expresses some of the basic elements that guide the seeker's strategy. A key element in this model is that there is a minimum asking wage that searchers will be willing to accept in their attempts to find employment. They will stop searching once they find an offer that is at least as high as this reservation wage and will make them better off than the financial circumstances of their unemployment. Thus the probability of leaving the job search queue depends on the arrival rate of job offers and the probability that there will be an offer that is at least as high as the reservation wage. An unsuccessful job seeker will continue actively looking for employment as long as the expected returns of finding

employment, which meet basic needs, are higher than the cost of searching (Mortensen 1986). The job search process may switch to passive search if the costs are too high or the prospective rewards to actively searching are too low.

The process of job search can be remarkably different from person to person depending on the resources they have available to them and their access to information. If the unemployed have access to information about vacancies, through social networks and/or advertisements, they can use the information to only apply for jobs that meet their reservation wage (Jackman and Layard 1991). If they have the financial resources to cover their costs, in addition to social networks, they'll be able to apply both active and passive strategies, which will yield more job offers. The combination of making the right applications (in terms of wages) and higher expected job offers mean that the probability of them finding employment is higher. On the other hand, people could be in a position where they have very little access to information about the labour market. This means that they will have no choice but to engage in active job search regardless of whether they have the funds to cover the costs or not. They will have to learn about which vacancies are suitable through a process of trial and error. Unlike searchers who have access to information and social networks, these searchers are likely to have a lower frequency of suitable job offers, which results in a lower probability of finding employment.

4.2.4.b. Choice of job search strategy

The strategy that an unemployed person uses to search either actively and/or passively depends on the resources that are available to them. From a psychological perspective, job search is characterised by the participant's ability to self-motivate, deal with uncertainty and possible rejection, and continue searching (Kanfer, Wanberg and Kantrowitz 2001). In addition to the direct financial costs of search, negative feedback from the job market can be discouraging to the seeker.

Information about the availability of jobs and the wage distribution are key elements in determining the seeker's success according to the job search model. Earlier, I referred to the state of the economy in the third quarter of 2010 and assumed that this information was freely available to the searchers. This is a plausible assumption considering how ordinary these statistics were and still are. By 2010, the economy had begun its recovery from the financial crises and the labour force participation rate had stabilised at 53.6% (Statistics South Africa 2010). The increased participation could not be absorbed by the labour market and was accompanied by an increase in unemployment. Knowing this could also contribute to decreasing the frequency of job search.

Most of the active job seekers in my sample are place-to-place searchers. The dataset that I use gives us the opportunity to view the features that set the place-to-place seekers apart from other types of job seekers. Schöer and Leibbrandt (2006) argue that the chosen method is a result of facilitators and constraints on job search activities rather than individual characteristics. So, once I have identified the place-to-place seekers, I can map the indicators of the facilitators and constraints that determine duration and scheduling of job search.

4.3. Data description

The empirical analysis in this chapter uses the nationally representative TUS collected by Statistics South Africa in the fourth quarter of 2010. This survey was conducted during the same period, and with shared infrastructure,[11] as the 2010 Q4 QLFS. Sampling occurred with a three-stage procedure: during the first stage, PSUs were selected from the master sample (based on information from the 2001 Census) with probability proportional to size; during the

[11] The TUS uses, among other things, the same fieldworkers as the QLFS. However, the TUS is a standalone survey and its respondents cannot be matched to those in the QLFS.

second stage, dwelling units were selected from PSUs using a systematic sampling procedure. From each household, a maximum of two members older than 10 years were selected to participate in the survey (Statistics South Africa 2013) which is the third sampling stage. This resulted in a total of 39 018 observations.

The TUS is a diary-based survey that asks respondents to report the activities that they participated in on the day before the interview date. Respondents were asked to list at least one and as many as three activities for each 30-minute interval of the day, as well as the location of each activity. When reporting multiple activities, respondents were also required to specify whether these activities occurred simultaneously or sequentially, but not how much of the half-hour interval was spent on each activity. Due to the incomplete information contained in the responses, it assumed that activities performed within the same interval were of equal duration and add up to half an hour. This assumption can lead to inaccuracies in the duration spent on specific activities,[12] but is necessary to ensure that the total duration of activities adds up to 24 hours. Given the focus of this chapter on active job search activities, I calculated the period that the unemployed spent on such activities. This was the sole reported activity in approximately 94% of reported instances, so inaccuracies due to the treatment of multiple activities is unlikely to be an important problem.

Several studies (Kingdon and Knight 2006; Klasen and Woolard 1999) have argued that the broad definition of unemployment is a more suitable measure of unmet demand for work in the South African labour market. The evidence suggests that the non-searching unemployed is dominated by discouraged work seekers rather than by the economically inactive who are

[12] For example, if one activity is often preceded by another shorter activity within the same 30-minute interval, then this assumption will overstate (understate) the duration of the earlier (later) activity. Furthermore, if someone reports listening to music while travelling to work for 30 minutes, then this assumption will inaccurately reduce the travelling time by half.

voluntarily unemployed at market wages. For this reason, the broad definition of unemployment (see Chapter 3) has been used as the preferred unemployment measure.

A preliminary analysis of the TUS shows that some respondents who would be classified as non-searching unemployed based on their responses to the standard StatsSA unemployment questions actually engaged in active job search activities in the previous day. The sample also contains some individuals engaged in active job search, despite providing responses indicating that they are economically inactive by the broad definition. Both groups of job seekers were added to the unemployed, resulting in a total of 6671 observations for this study. Of these unemployed job seekers, 402 respondents reported job search activity in the previous day. The difference between the total observations and the active job seekers alerts us to a possible sample selection problem that I will have to address when assessing the time spent on job search activities by using a type of corner solution technique.

4.4. Methodology

This chapter seeks to investigate the determinants and constraints of job search – both the decision whether to search and the duration of search. The decision to search entails several sequential decisions. Firstly, the individuals decide about *whether* they will search for employment on a specific day. Secondly, those who decide to search must determine *how long* to spend on job search. Thirdly, they have to decide *when* – what time of day – will be the most beneficial or least costly. Modelling the outcomes of this series of decisions requires acknowledging the presence of both sample selection and censoring in the observed outcomes.

Cragg (1971) developed an econometric model that is suitable for simultaneously modelling the decision of whether to search as well as duration of search with cross-sectional data. In his model there is an event, job search in my case, which may or may not occur for each

observation. If this event occurs, there will be a positive random variable that is associated with it. If the event does not occur, the random variable will have a value of zero. The random variable, in this case, is duration of search.

Cragg's model simplifies active search into a two-part model since the individual (firstly) decides whether he or she will participate in the activity d_i on the day and (secondly) the duration of the search activity y_i, after he or she has done the relevant cost-benefit analysis.

The probability that the individual will participate in active search on the day is $P(d_i = 1|x_i) = \Phi(\boldsymbol{x_i\alpha})$, which can be estimated from the probit. Because I can only observe y_i if the decision to search is positive, the density of the search duration is $f(y_i|\boldsymbol{x_i}, d_i = 1) = \phi\left(\frac{y_i - \boldsymbol{x_i\beta}}{\sigma}\right)\left[\sigma \times \Phi\left(\frac{\boldsymbol{x_i\beta}}{\sigma}\right)\right]^{-1}$, which can be estimated by a truncated regression.

These two hurdles in the decision-making process are captured by the log likelihood function:

$$l(\theta) = 1[y = 0]log[\Phi(-\boldsymbol{x\alpha})] + 1[y > 0]\{log[\Phi(\boldsymbol{x\alpha})] + ln\theta\phi(\theta y - x\gamma) - log[\Phi(x\gamma)]\}$$

Cragg's model assumes that the errors of the two parts of the model are uncorrelated. I can extend the model to allow the decision to search and the duration of search to be correlated ρ. The search duration y_i is modelled by the latent variable y_i^*, generated by regressors such as human capital, household and time-geography factors x_i:

$y_i^* = \boldsymbol{x_i'\beta} + \varepsilon_i$ where $\varepsilon_i \sim IIDN(0, \sigma^2)$ and is independent from $\boldsymbol{x_i}$

The duration is subject to the decision to participate in job search. This means that I must add a sample selection mechanism to the model:

$d_i = 1[d_i^* > 0]$ where $d_i^* = \boldsymbol{x_i'\alpha} + u_i$ and $u_i \sim IIDN(0,1)$ and is independent from $\boldsymbol{x_i}$

This extension affects the conditional expectation function of the search duration because I can always observe the value of d_i but will only observe the value of y_i if $d_i = 1$:

$$E[y_i|x_i, y_i \; is \; observed] = E[y_i^*|x_i, d_i = 1] = \boldsymbol{x_i'\beta} + E[\varepsilon_i|u_i > -\boldsymbol{x_i'\alpha}] = \boldsymbol{x_i'\beta} + \rho\sigma_\varepsilon\lambda_i$$

where $\lambda_i = \phi(\boldsymbol{x_i'\alpha})/\Phi(\boldsymbol{x_i'\alpha})$ is the inverse Mills ratio. This means that if d_i and y_i are correlated, a regression of y_i on x_i will not provide consistent estimates of $\boldsymbol{\beta}$. I can use partial maximum likelihood of the joint density of d_i and y_i, for the observed values of y_i (Greene 2005), to estimate the model. Using the Olsen transformation (Olsen 1978), where $\theta = \sigma^{-1}$ and $\gamma = \beta\sigma^{-1}$, the partial log likelihood function is:

$$lnL = \sum_{d=0} ln\Phi(-x\alpha) + \sum_{d=1} \left\{ ln\Phi\left[\frac{x\alpha + \rho(\theta y - x\gamma)}{\sqrt{1-\rho^2}}\right] + ln\theta\phi(\theta y - x\gamma) \right\}$$

It is not difficult to think of instances that would result in correlated errors, such as when there are common omitted variables in the equations. One example is when high transport costs affect both the decision to search and the duration of search, which happens when the job seeker must go to different locations for available employment opportunities. However, if the errors are not correlated, then there is no sample selection problem and the equation for the duration of search is not different from the full population. I use Heckman's maximum likelihood estimation for this model and use the Wald test for independent equations to check whether sample selection holds.

A case can be made for using both Cragg's hurdle model and the Heckman maximum likelihood model. The decision between the two models is based on whether the duration of active job search calls for the use of a corner solution model or an incidental truncation method. The participation decision is unaffected by this discussion because it is estimated with a probit in both models.

Since the survey only asks about the job search activities of the previous day, the data contains a high proportion of individuals who are unemployed and did not search on the day that has been documented. The question arises, how do I treat the duration of search for the unemployed

who did not participate? If I treat them as zeros, I have a corner solution problem. If I treat them as missing values, I have a truncation problem.

I only observe positive values of the duration of search when there is participation in job search. If I believe that this is a corner solution problem, then I have assumed that the respondent has chosen to allocate zero minutes towards active job search. An example of this is when some of the unemployed may have grown discouraged or may be constrained from active job search and opt to seek employment passively through indirect means such as social networks.

However, because the duration variable is only observed for those who chose to use a part of their day for active search, I may have a case of incidental truncation. This is different from the respondent choosing to allocate zero minutes to active job search. For example, active job seekers will sometimes take days off from job search and this may coincidentally occur on the documented day. In this case the value of the duration of job search is missing.

4.5. Results

4.5.1. A comparison of the time-use survey and the Quarterly Labour Force Survey

Since the TUS is rarely used in South African labour market research, my first step in the empirical analysis was to check whether the labour market responses in this survey is consistent with those of the Quarterly Labour Force Survey (QLFS) in the fourth quarter of 2010. Table 4-1 compares some labour market measures and demographic characteristics for the relevant samples in the TUS and QLFS. I do this by conducting a two-sample proportions test for some categorical variables and running a Wilcoxon rank-sum test for some continuous variables.

Table 4-1: Comparisons of the descriptive statistics from the time-use survey (TUS) and the Quarterly Labour Force Survey (QLFS)

$H_0: QLFS - TUS = 0$	z	*p*-value
Wilcoxon rank-sum test		
Age	-5.533	< 0.001
Education	1.164	0.2441
Test of proportions		
Narrow unemployment	0.6%	0.3925
Broad unemployment	1.3%	< 0.001
Labour absorption ratio	-5.2%	< 0.001
Labour force participation rate	-6.6%	< 0.001
Women	0.003	0.404
Cohabit	-0.031	< 0.001
Black	-0.012	< 0.001
Coloured	0.007	0.002
Indian	0.001	0.310
White	0.004	0.026
Occupations		
Legislators	0.019	< 0.001
Professionals	0.012	< 0.001
Technical professionals	0.004	0.295
Clerks	0.007	0.028
Service workers	-0.004	0.251
Skilled agricultural workers	-0.006	< 0.001
Craft and trade workers	-0.015	< 0.001
Machine operators	-0.008	0.012
Elementary occupation	-0.007	0.121
Domestic occupation	-0.001	0.814
Industry		
Agriculture	-0.011	< 0.001
Mining	-0.004	0.034
Manufacturing	0.008	0.031
Utilities	-0.001	0.389
Construction	-0.012	< 0.001
Retail	-0.006	0.192
Transport	0.009	< 0.001
Financial services	0.009	0.005
Communities	0.012	0.011
Private households	-0.003	0.313
Region		
Urban formal	0.014	< 0.001
Urban informal	-0.018	< 0.001
Tribal areas	0.010	0.004
Rural formal	-0.006	0.000

Province		
Western Cape	0.004	0.056
Eastern Cape	-0.003	0.212
Northern Cape	-0.016	< 0.001
Free State	0.007	< 0.001
KwaZulu-Natal	0.005	0.051
North West	-0.003	0.173
Gauteng	0.021	< 0.001
Mpumalanga	-0.010	< 0.001
Limpopo	-0.006	0.010

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses.
Used person weights from the TUS data set.

The two samples' narrow unemployment rates are similar. I start to find differences in the samples when I consider the other labour force indicators. The broad unemployment rate in the QLFS is 1.3 percentage points higher than in the TUS. I can also see that the differences between the labour absorption ratio and the labour participation rate are large and statistically significant; the QLFS labour absorption ratio is 5.2 and the QLFS labour participation rate 6.6 percentage points lower than the TUS.

Generally, the QLFS and the TUS are quite similar; any statistically significant differences between them tend to be small. The respondents from the TUS are slightly older but the differences in the distributions of their education levels are insignificant. The differences in the proportions of the racial groups are smaller than 1% and the difference in the proportion of women is insignificant. The differences in occupation, industries, provinces and regions are generally insignificant and the ones that are significant are small (less than 2%).

Comparison of the two samples shows that they are essentially drawn from the same population. This means that the inferences that are made about the labour market are comparable to those based on the QLFS. The advantage of using the TUS is that it allows us to dig deeper into my understanding of the broad versus the narrow unemployment rate because

this dataset has information about the activities of strictly unemployed and discouraged work seekers.

4.5.2. Participation in active job search

Looking at the diary entries collected on weekdays, I can see that about 10.44% of the strictly unemployed participated in active job search. A somewhat surprising finding was that about 2.21% of discouraged work seekers also participated in active job search. Discouraged work seekers, according to StatsSA, are people who have given up the search because there are no jobs in the area, they cannot find work that matches their skills, or they have lost hope of finding any kind of work (Statistics South Africa 2011). And yet, the TUS shows us that this group still tries to (actively) find employment despite their reasons for being discouraged. This gives us more evidence in support of using the broad definition of unemployment in trying to understand the South African labour market.

Table 4-2 shows us the proportions of searchers on weekdays. Here, I can see that women make up a smaller proportion of active searchers on any given day, in any type of circumstance. Using multiple modes of job search can improve the outcomes for seekers. The low uptake on active search could then be a contributing factor to the low employment outcomes.

Among women with childcare responsibilities, there are smaller proportions of active job seekers than among women who do not have childcare responsibilities: 2.5% of women with childcare responsibilities are active job seekers, while this proportion is 3.9% for women who do not have childcare responsibilities. The reverse is true for men: Among men who are not responsible for any childcare, 13.4% are job seekers, whereas 17.2% of men who are responsible for childcare are also job seekers (see Table 4-2). This may be an indication of the gendered allocation of responsibilities when there are children in the household: social norms

dictate that women are nurturers who spend more time on childcare and men are providers who spend more time trying to find income sources for the household. People who live with their partners are more likely to actively seek employment than those who do not. This is true for both women and men, although the difference between men who cohabit and men who do not is larger than the difference between women who cohabit and women who do not.

When considering the factors that are usually associated with human capital (age and levels of schooling), I find that most of the active search takes place during youth and prime adult years (see Table 4-2). There are higher proportions of young female active job seekers than there are older female job seekers. Male search is more concentrated in the prime adult ages. Women are more likely to be active job seekers as they attain higher levels of schooling, whereas men who have no schooling or have incomplete primary or secondary education are more likely to conduct active job search than other men.

Factors that reflect the geographic regions tell an unsurprising story of economically inequitable spatial planning. People who live in urban and rural formal areas have higher proportions of active searchers than those who live in urban informal and tribal areas (see Table 4-2). The latter two areas tend to be far from places of work and high transport costs would make frequent job search very difficult.

Table 4-2: Proportion of the unemployed who participated in job search on weekdays

Proportion of searchers			
	Women	Men	All
Unemployed	0.049	0.172	0.104
Discouraged	0.006	0.049	0.022
Broadly unemployed	0.033	0.137	0.078
No childcare	0.039	0.134	0.090
Childcare	0.025	0.172	0.042
No partner	0.033	0.122	0.076
Partner	0.034	0.190	0.083
Not typical day	0.036	0.025	0.032
Typical day	0.033	0.142	0.080
No schooling	0.017	0.188	0.077
Incomplete primary	0.024	0.124	0.074
Primary completed	0.025	0.073	0.046
Secondary	0.034	0.161	0.088
Matric	0.039	0.113	0.071
Tertiary education	0.035	0.087	0.053
Ages 15–24	0.044	0.092	0.066
Ages 25–34	0.035	0.161	0.086
Ages 35–44	0.017	0.212	0.085
Ages 45–54	0.025	0.137	0.081
Ages 55–60	0.003	0.103	0.057
Urban formal	0.041	0.173	0.098
Urban informal	0.036	0.146	0.083
Tribal areas	0.021	0.075	0.044
Rural formal	0.050	0.272	0.105

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses.
Used person weights from the TUS data set.

4.5.3. Duration of active job search

In this section I see that although the frequency of active searchers is small, a substantial part of the day is allocated to job search when it occurs. The median time that the broadly unemployed use on job search is about 240 minutes for the day captured in the study. To put this in context, I know that job seekers in the USA spend about 167 minutes on job search per

day (Krueger and Mueller 2012). Table 4-3 shows the median search times of active job seekers in the study.

It is not immediately clear from Table 4-3 whether women allocate less time to job search than men. Women who are discouraged work seekers seem to spend a lot of time on job search; however, the proportion of discouraged work seekers that I observed is so small that it is impossible to meaningful interpret the figure of 450 minutes.

The median search time for women and men who have no childcare responsibilities is the same (240 minutes). When I look at the median search times of women and men who do have some childcare responsibilities, I can see that men allocate more time to job search than women. So, women who have childcare responsibilities not only search less frequently but also search for shorter periods than men who share in these responsibilities. Men and women who do not cohabit with their partners spend less time on job search; however, this result is only statistically significant for men. The median time allocated to job search is similar for women and men when they cohabit with a partner. So, women who live with their partner are more likely to actively search for employment and they spend a longer time looking for work. This information shows us that household composition has an important effect on active search outcomes for both female and male job seekers.

Younger women not only search for employment more frequently, but they also spend more time on the search activity than older women. The higher frequency and longer duration for men is clustered in the prime adult ages. In Table 4-2, I saw that men who had no schooling or completed their secondary education conducted active job search more frequently. In Table 4-3, I see that women who had not completed their secondary education allocated more time to job search than women who had completed matric. Male searchers who had not completed secondary school had spent less time on job search than those who had a matric qualification.

Table 4-3: Duration of search for respondents who participated in active job search

Median search time (minutes)			
	Women	Men	All
Unemployed	210	240	240
Discouraged	450	180	210
Broadly unemployed	210	240	240
No childcare	240	240	240
Childcare	180	270	270
No partner	195	240	225
Partner	240	255	255
Not typical day	30	330	30
Typical day	240	240	240
No schooling	90	180	180
Incomplete primary	210	255	240
Primary completed	450	270	330
Secondary	270	240	240
Matric	165	270	210
Tertiary education	210	90	120
Ages 15–24	270	225	225
Ages 25–34	210	255	240
Ages 35–44	270	240	240
Ages 45–54	180	270	270
Ages 55–60	30	270	270
Urban formal	195	240	240
Urban informal	240	240	240
Tribal areas	270	225	240
Rural formal	210	180	210

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses.
Used person weights from the TUS data set.

Regarding the geographic regions, I find that women who live in urban and rural formal areas – where active search occurs more frequently – have lower median search times. Women who live in tribal areas and urban informal areas may have higher transport costs and therefore

spend longer periods in the areas of search to compensate for the lower frequency. Men who live in urban areas (formal or informal) allocate more time to job search than those who live in rural formal and tribal areas. It is not clear why there are such differences in the patterns of job search duration based on geographic characteristics for men and women. Perhaps the answer to this lie in the locations of, and travel modes to, job search.

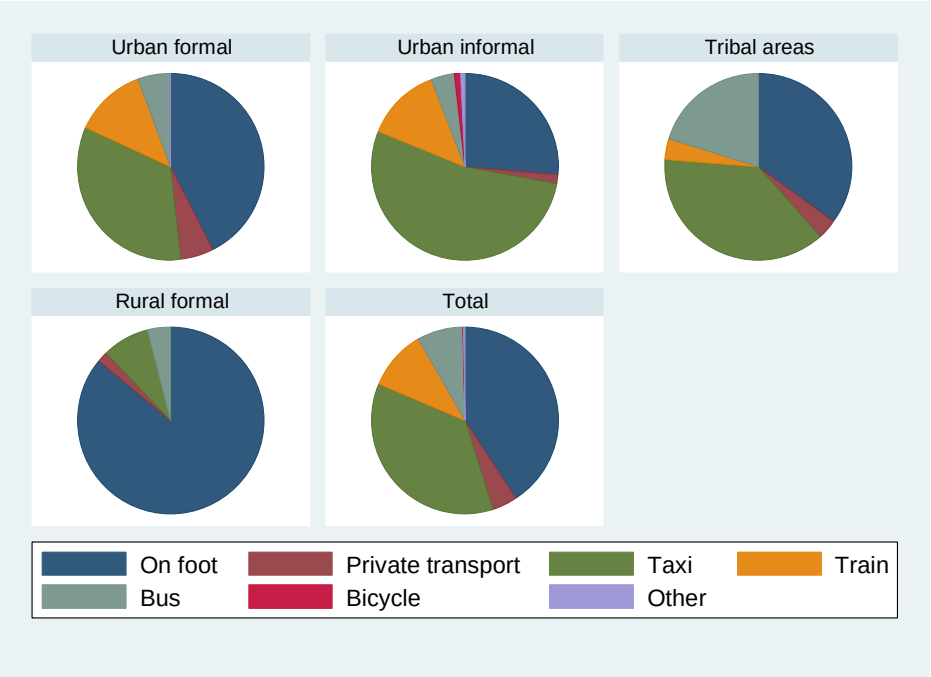
4.5.4. Location of and travel modes to active job search

The most common modes of transport to areas of search are by taxi and on foot. Figure 4–1 shows that about 65.1% of searchers who live in urban informal areas use taxis or trains and 25.9% can reach their destinations on foot. Searchers who live in tribal areas reach their destinations via taxis or busses (54.2%) or on foot (32.8%). This information gives us an indication of the type of distance the job seekers who live in these areas must cover to reach work opportunities. I can contrast this with searchers who live in urban formal areas, where about 40.5% uses taxis or trains and 37.5% reach search areas on foot, or with searchers who live in rural formal areas, where about 79.6% of searchers walk to their destinations. Although some searchers can conduct job search over a walkable distance, there are many job seekers who must use transport to reach work opportunities. It is also worth noting the small proportion of searchers who use private transport to get to areas of job search. This emphasises the importance of public transport in aiding the efforts of unemployed job seekers in South Africa.

The dominant locations of active job search are workplaces and public areas. This is true for most geographic regions except for rural formal areas, where seekers mostly go to other dwellings (44.6%) and the rest are spread between farms, workplaces and public areas (See Figure 4–2). Figure 4–3 illustrates that about 13.1% of women conduct their job search from home. Other than that, women go out to look for jobs in workplaces and public areas just like men. The modes of transport used by women and men to reach their job search destinations are

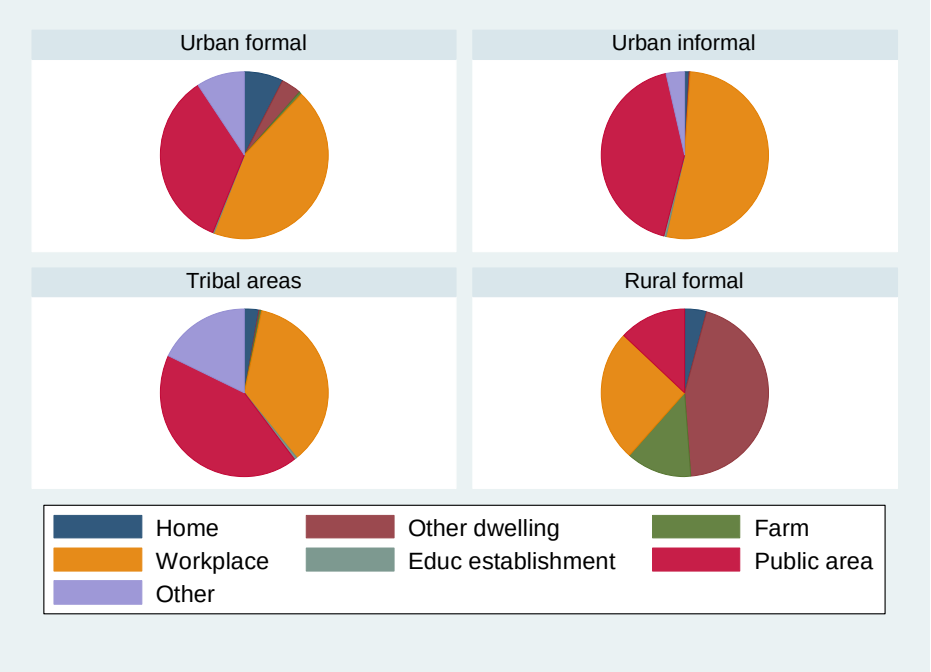
similar (See Figure 4–4). Both are highly likely to use taxis or walk to these locations. Men are also more likely to use trains as a mode of transport.

Figure 4–1: Transport modes used for active job search by geographic region



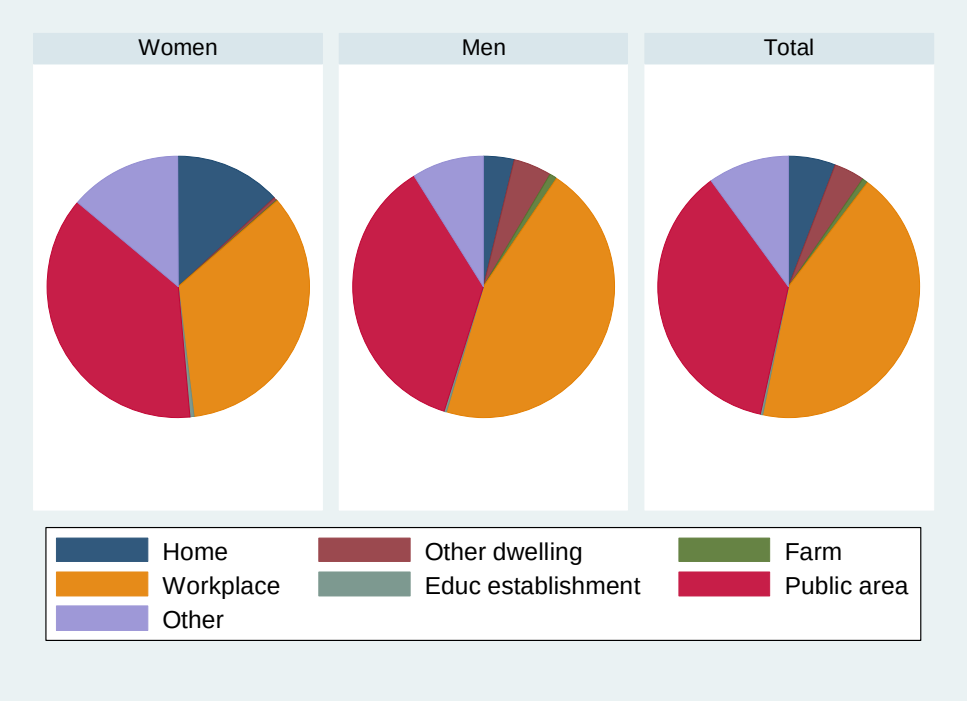
Used person weights from the TUS data set.

Figure 4–2: Locations of active job search by geographic region



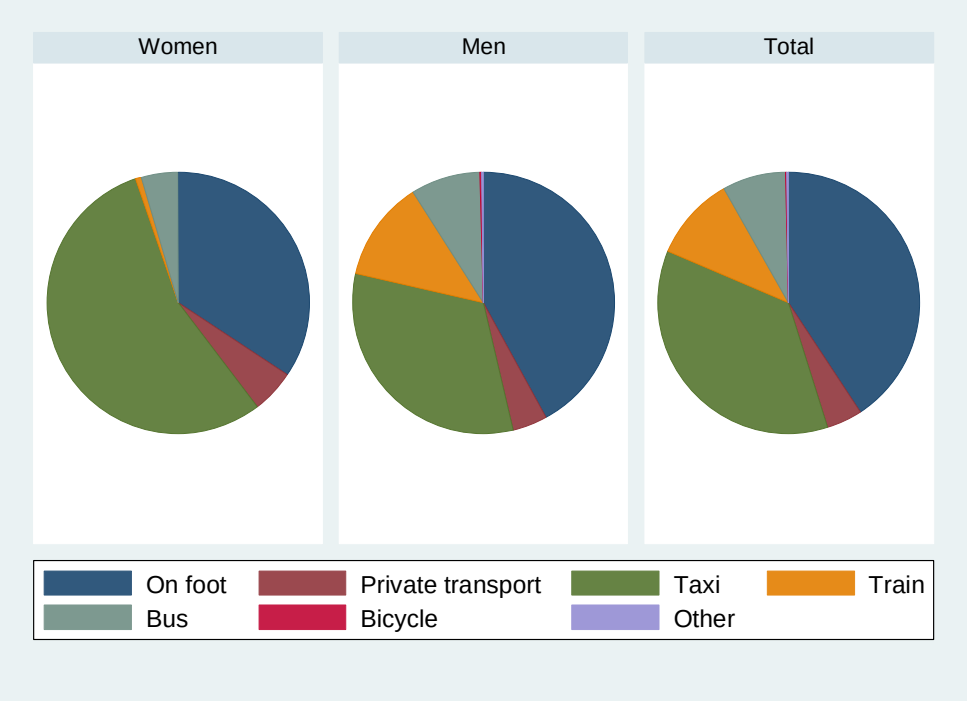
Used person weights from the TUS data set.

Figure 4–3: Locations of active job search by the sex of the respondent



Used person weights from the TUS data set.

Figure 4–4: Transport modes used for active job search by the sex of the respondent



Used person weights from the TUS data set.

4.5.5. Cragg's hurdle model

If we believe that the time allocated to search is a corner solution problem, then the method of analysis will be Cragg's hurdle model and the value of the duration of search when the respondent decides not to participate in active job search is zero. I will discuss the results from the participation portion of the model in this section and follow with the estimates from Cragg's model. The participation discussion will not be repeated in the section covering Heckman's selection model.

The decision to actively search differs according to the sex of the respondents, their level of household responsibility and various demographic factors. Unemployed people's position in the job queue depends on their human capital and the closest I can get to that in measurable variables is their highest level of education as well as their age. The job search model also makes it clear that the decision to search depends on a person's financial capabilities. Therefore, I controlled for gender, logged household income, the main source of household income, and the level of education. I also controlled for household and demographic variables, such as whether they are responsible for childcare or have a partner in the household, and the respondent's racial group. Lastly, I included variables related to time and geography, such as the day of the week, whether this was a typical day, the urban/rural classification and the province the person lived in.

4.5.5.a. Participation in active job search

It is clear from Table 4-2 that women are less likely to participate in active job search; this effect is statistically significant. Having childcare responsibilities seems to decrease the probability of search and living with a partner has a positive effect, but neither of these

household factors are significant when I control for other factors that affect the participation decision. The only significant difference that I can see, regarding racial groups, is that the coloured population group is less likely to participate in active job search than the black population group.

True to the job search model, I see that household income has a significant effect on the participation decision. People who come from households in better financial circumstances are less likely to participate in active job search. The source of those funds is important. I contrast those whose main source of household income are from wages to those with alternative sources of income and I find that the unemployed are more likely to participate in active search when the funds come from businesses/farms or the Unemployment Insurance Fund.

Although the level of education is important for getting ahead in the job queue it does not seem to significantly change the probability of participation in active job search. Insignificant as it may be, it is worth noting that the higher levels of schooling are negatively correlated with the probability of active search. Getting older, however, significantly increases the probability of search until the person nears the retirement age. As the searchers pass the prime adult age the probability of search declines.[13]

The time and geography variables do not display any significant changes in the probability of search. It looks like the unemployed may be more likely to search on a typical day and that search is less likely mid-week, but none of these effects are significant. The same applies to the urban/rural setting that the person comes from. People who live in formal urban areas are more likely to actively search, but I cannot say this with certainty.

[13] The turning point of this convex function is at age 55.

4.5.5.b. *Duration of active job search*

Women seem to search for shorter periods than men, but the estimated effect is not significant (See Table 4-4). The participation portion of the model shows us with certainty that women are less likely to actively search for jobs, but I cannot say the same for the time that is allocated to search. People with childcare responsibilities may spend less time on job search while people who live with a partner may be able to spend more time on search activities.

Table 4-4 shows that although household income decreases the probability of search, it has a small and insignificant effect on the amount of time the seeker spends on the activity. And, while the source of income was informative about the participation decision, this is not the case for the duration of search. What I can see, quite convincingly, is that the search time is much less for people who live in households where the main source of income is from private pensions or investment.

A person's education status does not seem to have a significant effect on either the participation decision or the time allocated to job search. I can see from Table 4-4 that unemployed people with some form of schooling and older job seekers could be spending more time on active job search, but neither of these factors (that are normally used for human capital) give us a clear indication of how much time individuals spend on job search.

A statistically significant pattern emerges when I consider the amount of time the unemployed use on job search as I look at the day of search. The difference between Monday and Tuesday is small and insignificant but the time decreases as we reach the middle of the week and it tapers off until the end of the week. A similar pattern is observed with participation, but I do not have significant evidence for it.

Table 4-4: Cragg's hurdle and Heckman's selection models of active job search

		Cragg's Hurdle Model	Heckman's Selection Model
	Participation	Duration	Duration
Women	-0.756***	-43.841	-31.452
	(-8.39)	(-1.79)	(-1.44)
Partner	0.186	32.534	27.029
	(1.87)	(1.18)	(1.18)
Childcare	-0.212	-43.387	-35.645
	(-1.96)	(-1.44)	(-1.54)
Logged HH income	-0.095*	-12.495	-9.172
	(-2.06)	(-0.72)	(-0.63)
Source of HH income: NA	0.558**	-33.246	-30.970
	(2.72)	(-0.86)	(-0.98)
Source of HH income: Business	0.553*	-37.217	-36.371
	(2.54)	(-0.93)	(-1.14)
Source of HH income: State grants	0.184	-8.236	-5.847
	(1.72)	(-0.28)	(-0.24)
Source of HH income: Pensions	-0.060	-348.13**	-173.83***
	(-0.22)	(-3.20)	(-4.32)
Source of HH income: UIF	0.785*	75.199	61.463
	(2.08)	(1.41)	(1.43)
Source of HH income: Remittance	0.245	-6.765	-4.708
	(1.89)	(-0.16)	(-0.13)
Source of HH income: Other	-0.073	-122.315	-95.692
	(-0.26)	(-1.33)	(-1.47)
Incomplete primary	-0.245	28.275	24.343
	(-0.98)	(0.53)	(0.53)
Primary completed	-0.463	114.805	98.387
	(-1.56)	(1.70)	(1.64)
Incomplete secondary	-0.114	30.973	25.523
	(-0.49)	(0.61)	(0.60)
Matric	-0.186	11.331	9.503
	(-0.77)	(0.22)	(0.22)
Tertiary	-0.204	23.331	27.991
	(-0.69)	(0.33)	(0.51)
Age	0.055*	9.004	7.322
	(2.14)	(1.25)	(1.25)
Age*Age	-0.001*	-0.123	-0.101
	(-2.10)	(-1.21)	(-1.21)
Coloured	-0.557***	-90.204**	-72.42**
	(-3.34)	(-2.62)	(-2.60)
Indian/Asian	-0.428	20.024	14.727
	(-1.11)	(0.30)	(0.28)
White	0.033	-26.195	-13.168
	(0.15)	(-0.48)	(-0.32)
Typical day	0.268	198.759	120.133*
	(1.31)	(1.87)	(2.51)
Tuesday	0.038	2.424	3.001

	(0.35)	(0.09)	(0.12)
Wednesday	-0.033	-60.015*	-47.000*
	(-0.28)	(-2.01)	(-1.98)
Thursday	-0.118	-65.024*	-51.696*
	(-0.91)	(-2.17)	(-2.19)
Friday	0.061	-80.021**	-64.99**
	(0.45)	(-2.69)	(-2.73)
Urban formal	0.171	16.923	11.994
	(1.23)	(0.64)	(0.56)
Tribal areas	-0.203	-6.321	-4.242
	(-1.24)	(-0.16)	(-0.13)
Rural formal	0.380	-79.639	-67.628
	(1.29)	(-1.42)	(-1.53)
Constant	-1.039	-17.610	87.849
	(-1.66)	(-0.08)	(0.52)
Ln(sigma)		4.897***	4.791***
		(77.72)	(102.43)
Ath rho		-0.060	
		(-0.45)	
Mill's ratio			-7.204
			(-0.450)
Observations		3844	3844

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses. The duration of search is measured in minutes. Province omitted.
Used person weights from the TUS data set.

4.5.6. Heckman's selection model

If I believe that the time allocated to search presents us with an incidental truncation problem, a selection model will be more appropriate. Additionally, the Heckman selection model allows for the errors from the two equations to be correlated instead of assuming that the decision to search is a function of two independent equations. I can test for the independence of the participation and duration decisions by using the Wald test of independent equations. In this case I find that the null hypothesis (H_0: $\rho = 0$) cannot be rejected since the *p*-value of the $\chi^2(1)$ is equal to 0.65. Because of this independence, I use these results to interpret the behaviour of the broadly unemployed population and not just those who chose to actively participate in job search on the documented day. Because I consider the values of the duration

variable to be missing when the respondent has not participated in active job search, the coefficients from the time allocation part of the model will be smaller or less negative than those from Cragg's model.

Women spend less time actively searching for employment than men; however, like the results from Cragg's model, this estimate is not statistically significant. The estimates from the household structure variables are also not statistically significant, although the magnitude and sign of the estimates show us that having a partner helps a person's ability to search and having childcare responsibilities constrains this ability. I cannot make definite arguments for this case.

People from the coloured racial group are less likely to participate in active job search and spend less time on the activity, relative to the black population group. Although there are visible differences in the likelihood of search in the other racial groups, these are not statistically significant. This is because the amount of people from the Indian and White population groups that are unemployed job seekers are so small that is difficult to extract a meaningful interpretation of the estimates.

By treating time allocation as incidental truncation, I can find a better representation of the duration of job search on a typical day. The unemployed are more likely to search on a typical day and I can say this with more certainty than I could when using Cragg's model. Job seekers are more likely to exert more effort at the beginning of the week – on Monday and Tuesday specifically. This is revealing of their active job search strategy.

4.5.7. Scheduling time for job search

I have established that active job search occurs infrequently and that when the seeker decides to participate in the activity, they do so for a long time. If time was homogeneous, then participation and duration could sufficiently explain active job search in relation to time. This

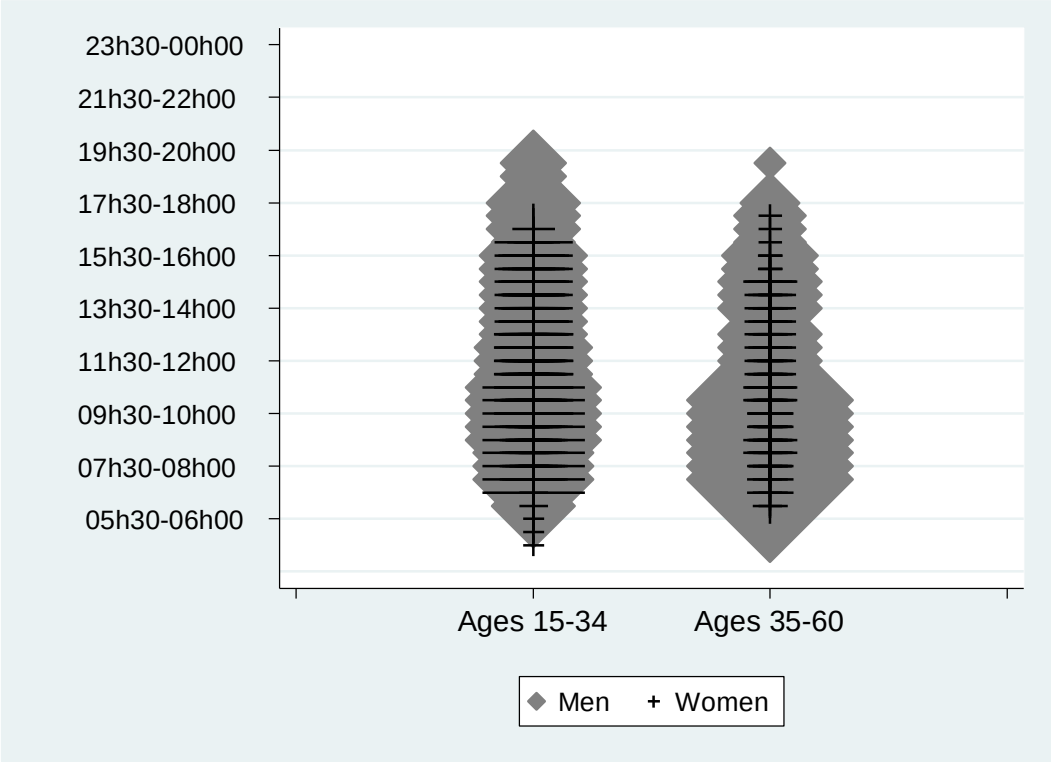
is not the case – an hour of job search at 07:00 is not necessarily the same as an hour of active job search at 19:00. In this section, I account for this scheduling constraint.

The scheduling constraint takes different forms in various situations; authority, coupling and capability constraints (Thrift 1977). For example: the time that job seekers can use is restricted by office hours (authority constraint); active job seekers must coordinate their availability with potential employers (coupling constraint); job search must compete with other essential activities such as sleep (capability constraint); or they must complete certain activities (such as travel) for job search to be possible. In this section, I describe the ways in which women and men differ in their schedules depending on the variables that are used to determine participation in and duration of job search.

The differences in the schedules of women and men are shown in Figure 4–5 to Figure 4–8: Time . These figures should be viewed as follows: the length indicates the time slots that were used for job search and the width indicates the share of women or men who were searching in each time slot.

In Figure 4–5 I see that men between the ages of 15 and 34 participated in job search even in the later hours of the day whereas women in the same age range did not participate in job search after 17:00. The differences in search schedules are also present for older individuals. A large group of men between the ages of 35 and 64 search in the earlier hours of the day and a few look for employment in the afternoon. On the other hand, the active searching of women between the ages of 35 and 64 is more evenly distributed throughout the day. I can also see (from the width of the figures) that there are more younger women participating in active job search than older women at any time in the day.

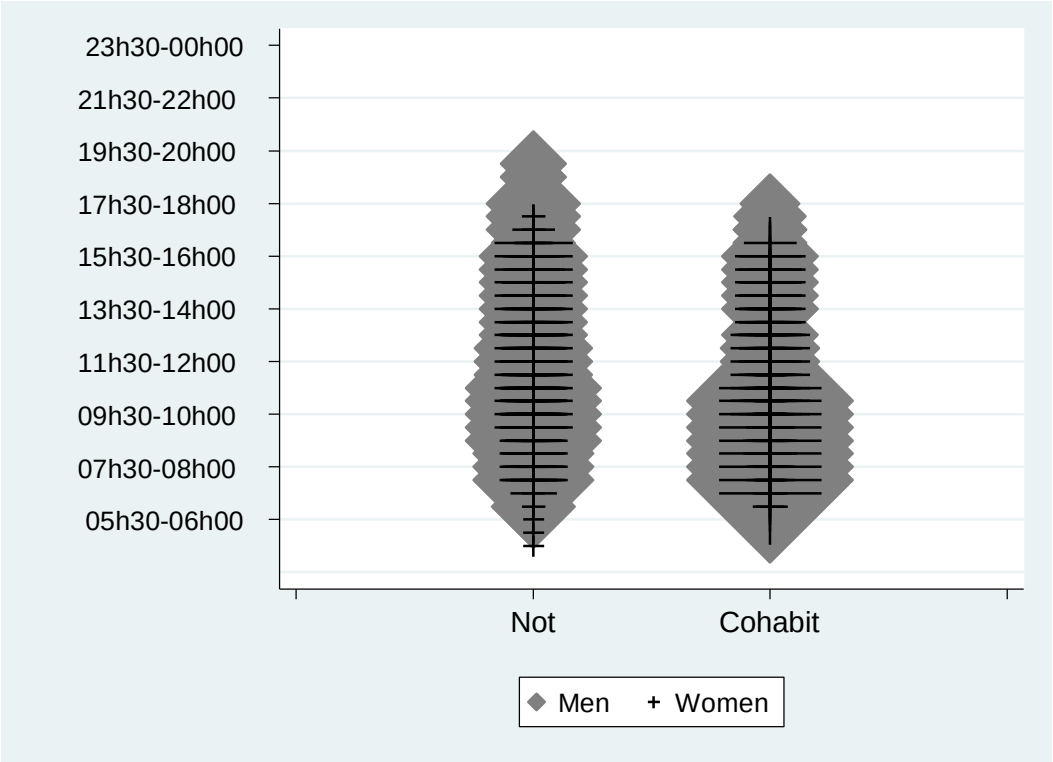
Figure 4–5: Time slots used for job search by people aged 15–34 and 35–60



Used person weights from the TUS data set.

Both Cragg's and Heckman's models showed us that people who cohabit with their partners are more likely to participate in active search and do so for a longer time. Figure 4–6 shows the scheduling patterns for people who cohabit with their partners. Here I see that women who live with their partners begin their active job search efforts later in the day than men as well as both men and women who did not cohabit. There is a group of men who live with their partners that engage in active job search in the early hours of the day and a few who search in the afternoon.

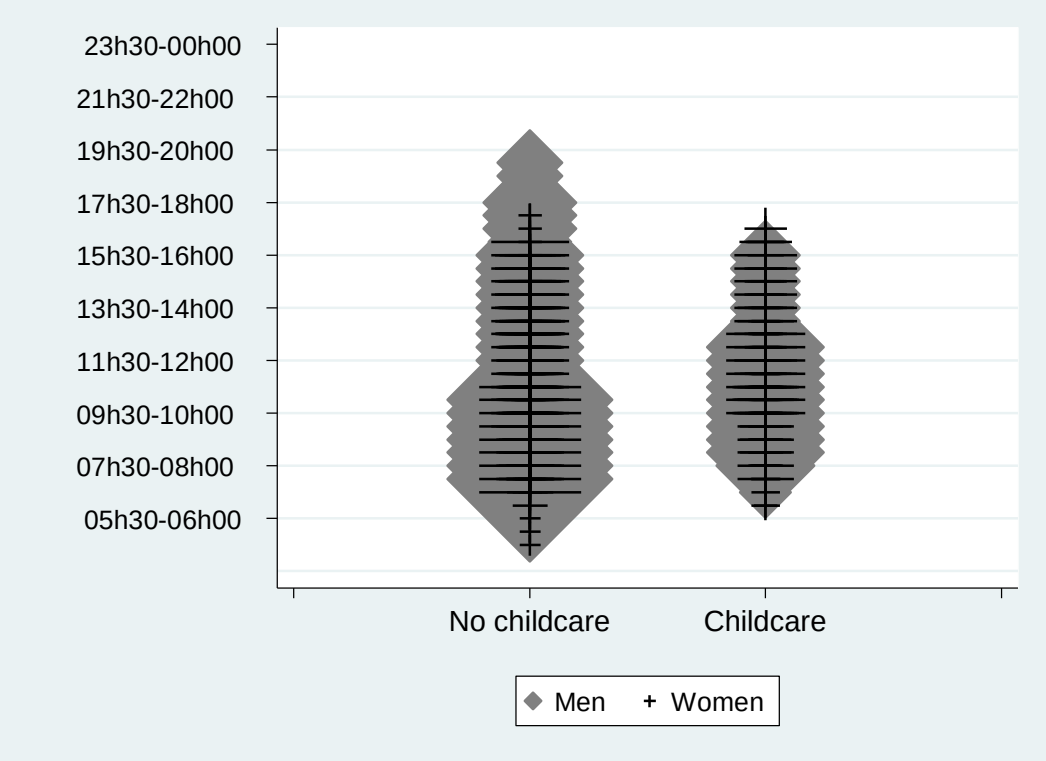
Figure 4–6: Time slots used for job search by people who cohabit with their partner



Used person weights from the TUS data set.

Another household factor which contributes to the individual's time scheduling constraints is being responsible for caring for children or adults who need care. The individual must coordinate time and place with their potential employer, and they must make sure that they fulfil their childcare responsibilities when they are needed. The participation and duration models showed that people are less likely to search when they have childcare responsibilities. The scheduling differences between those with or without some childcare responsibilities are shown in Figure 4–7. Individuals who have to spend time caring for children have limited time slots that they can allocate to job search. The absence of such responsibilities allows the job search to begin much earlier and end much later in the day. Furthermore, men who have no childcare responsibilities in the household could search at later times of the day.

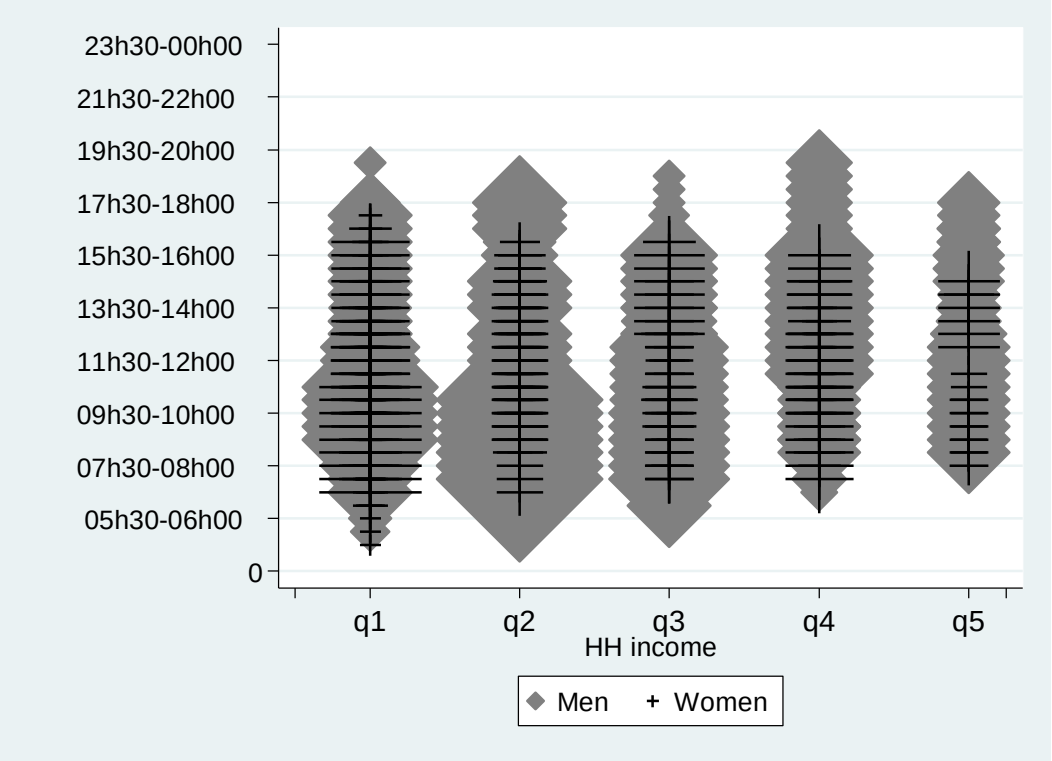
Figure 4–7: Time slots used for job search by people who have childcare responsibilities



Used person weights from the TUS data set.

People who come from lower-income households are more likely to participate in active job search. Figure 4–8: Time shows the scheduling patterns of searchers across household income quintiles. I see that most of the female searchers come from households with the lowest income. There are hardly any differences in the search patterns of women and men in this (first) quintile. In the second quintile there is a group of men who search in the morning, and start searching earlier than women. In general, men search until the late hours of the day regardless of quintile.

Figure 4–8: Time slots used for job search by people in these household income quintiles



Used person weights from the TUS data set.

Plotting active search with time slots illustrates that the scheduling of time for job search may be gendered. In general, men begin searching for employment earlier and stop searching later in the day than women. The exception here is men who take care of dependants in the household; women and men who are responsible for care in the household use similar time slots to participate in active job search. Women have more restrictions on the time slots that can be allocated to job search. These restrictions apply regardless of women's age, household income and responsibilities to take care of other household members. Limitations on the available time slots translate to less time available for job search in the day.

There is a pattern that runs throughout the schedule graphs and it reveals a group of men who search in the early hours of the day. From the graphs I can see that these morning searchers are

between the ages of 35 and 60, they cohabit with a partner, they have no responsibilities towards taking care of dependants, and they live in low-income households. It is difficult to conclude that I are looking at the same group of individuals from the graphs. Therefore, in the next section, I extend the study of the scheduling patterns to a multivariate regression analysis to help us understand the types of searchers who are active at different times in the day.

4.5.8. Scheduling constraints

Figure 4–5 to Figure 4–8: Time have illustrated how women and men with different characteristics allocate their search activities throughout the day. However, each graph could only show us one characteristic of the active job seekers at a time, in addition to the seeker's gender. Just as I controlled for human capital, household responsibilities and geography in the hurdle and selection models, I should also control for those characteristics when I look at the time slots scheduled for job search before I make any declarations about scheduling constraints.

Table 4-6 shows the results of four probit regressions. Each of these regressions are meant to show the relationship between the time slots of job search and human capital, household, geography and time-related characteristics. The only times that I could witness active job search were between 04:00 and 19:30. I divided this period into four-hour parts. In this way I were able to identify the types of people who search in the early morning (04:00–07:59), morning (08:00–11:59), afternoon (12:00–15:59), and late afternoon (16:00–19:59).

Women are less likely to actively seek employment in the morning. However, this effect is not statistically significant (see Table 4-5: Probits). People who cohabit with their partner are more likely to participate in job search in the earlier hours of the day, but are no more likely to search in the late afternoon than those who do not cohabit with their partners. Women who cohabit are less likely to search than men in any part of the day, but this effect is not significant.

Both men and women who have responsibilities towards taking care of children in the household are less likely to participate in active job search. The negative effects of childcare on active job search participation are statistically significant in the early morning (04:00–07:59) and in the afternoon (12:00–15:59). The early morning corresponds to the times when children are preparing (or being prepared) to go to school and the late afternoon corresponds to the times when children may be coming home from school. Unfortunately, the TUS design does not allow us to disentangle the duties within a household, but I have some indication (at the aggregate level) of the differences of search behaviour as a result of household obligations. I cannot observe the schedules of children and link them to the schedules of the job seekers within households. Therefore, all I can do (in terms of analysis) is draw links from the scheduling patterns of children to the job search scheduling patterns of adults at the aggregate level.

Active job seekers who live in lowest-income households are more likely to start searching at the earliest possible time in the morning. Thereafter, people from higher-income households join in the search activities. This is reflected in the less negative and statistically insignificant coefficients as the day proceeds. Women from lower-income households are slightly less likely to search in the morning than men. It seems that women who come from households with more income are more likely to start their search earlier in the day than women from lower-income households (see Table 4-5: Probits), although I cannot say this with certainty.

The results of the schedules reveal the groups of job seekers who are active in the four periods of the day. Women are less likely to be actively searching than men in every time slot. The early morning (04:00–07:59) searchers come from low-income households, they cohabit with their partners and they are not responsible for taking care of the children in the household (if there are any). Later in the morning (08:00–11:59), the active job seekers are older people who cohabit with their partners and are more likely to live in urban informal areas. The people who

search in the afternoon (12:00–15:59) are those who do not have to take care of children in the household, they cohabit with their partners, and are more likely to live in urban formal areas. There are no real distinguishing features of job seekers who are active in the late afternoon (16:00–19:59).

Table 4-5: Probits of the participation in active job search in each time slot

	04:00–07:59	08:00–11:59	12:00–15:59	16:00–19:59
Women	-0.703	-0.835	0.070	1.660
	(-1.14)	(-1.31)	(0.09)	(1.14)
Partner	0.419**	0.344**	0.347**	0.102
	(3.28)	(2.72)	(2.66)	(0.43)
Women*Partner	-0.225	-0.270	-0.226	-0.269
	(-0.93)	(-1.43)	(-1.21)	(-0.72)
Childcare	-0.366*	-0.189	-0.317*	-0.347
	(-2.54)	(-1.58)	(-2.53)	(-1.88)
Logged HH income	-0.229**	-0.109	-0.090	0.008
	(-3.21)	(-1.85)	(-1.23)	(0.04)
Women* Logged HH income	0.045	0.016	-0.075	-0.336
	(0.50)	(0.19)	(-0.73)	(-1.72)
Age	0.022	0.060*	0.051	0.086
	(0.80)	(2.32)	(1.62)	(1.82)
Age*Age	-0.000	-0.001*	-0.001	-0.001
	(-0.96)	(-2.37)	(-1.57)	(-1.69)
Typical day	0.518**	0.617**	0.490*	0.435
	(2.68)	(2.87)	(2.38)	(1.26)
Urban formal	0.233	0.113	0.374**	0.243
	(1.75)	(0.85)	(2.75)	(1.17)
Tribal areas	0.048	-0.357*	0.108	0.391
	(0.30)	(-2.25)	(0.66)	(1.49)
Rural formal	0.146	0.294	0.313	
	(0.44)	(1.06)	(1.33)	
Constant	-1.456	-1.583*	-2.214**	-5.347**
	(-1.93)	(-2.31)	(-2.72)	(-3.27)
Observations	28264	30712	30712	24560

Notes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. *t*-statistics in parentheses. Province omitted. Used person weights from the TUS data set.

4.6. Conclusion

A disturbing finding of this study is how infrequent active job search is given South Africa's problem of large-scale and open unemployment. A complementary finding is that the duration of search is long for those who do participate in active job search, which means that a lot of effort is channelled to active job search. Once I look at the different characteristics of job seekers, I gain more understanding of the constraints to participation in active search.

The diaries from the TUS reveal a proportion of discouraged work seekers who participate in active job search. A smaller proportion of discouraged work seekers participate in active job search than the narrowly defined unemployed. The finding that active job search occurs among what is thought of as the inactive unemployed is an important one. It adds to the existing evidence that supports the notion that discouraged work seekers should be considered unemployed members of the labour force rather than the economically inactive population.

Women have lower participation rates, shorter durations of active search, and use later time slots for active search than men. This shows that the disadvantages that women have in the labour market are also present in the job-search stage of labour market participation.

Household characteristics are closely linked to the behaviour of women in active job search. Job seekers who live with their partners are more likely to participate, search for a longer duration, and over more time slots of the day. The different scheduling patterns show that women are less likely to search throughout the day, but these effects are not statistically significant. If the job seekers take care of dependants in the household, they are less likely to participate in, and allocate less time to, search than those who do not have care-related responsibilities. The job seekers who had childcare responsibilities avoided participation in job search in the early morning and afternoon time slots, when children were more likely to require

their attention. Unemployed people from lower-income households are more likely to participate in and allocate more time towards active search.

Looking at the schedule, I found a group of men who start their search as early as possible in the morning. These men came from low-income households, lived with their partners, and had no childcare responsibilities. Perhaps these are seekers who look for casual jobs with little to no success.

Although educational level is important for one's place in the unemployment queue, it has little effect on the participation in and duration of active search. An increase in age, on the other hand, had a positive effect on the probability of active search. Older people were also more likely to use their morning to search for employment.

The aim of this paper was to gain knowledge on the nature of job search in South Africa. I found a proportion of people who are trying, despite the odds, to actively search for work while they cope with high levels of poverty and unemployment. An important element that ought to be the focus of future research is the success rates of the different types of job seekers that this paper identified. With this knowledge, I might be able to map out the labour market from the job-search stage to the types of occupations. At the very least, I should be able to understand the pathways to long-term unemployment.

5. Conclusion

This dissertation sets out to understand the ways in which gender inequality is maintained in even the most precarious economic conditions. Specifically, it looks at the way in which women are disadvantaged in terms of access to more desirable informal sector jobs, benefits from economic recovery and active job search.

Chapter 2 presented evidence of a heterogeneous informal sector in which the relative ease of entry into the survivalist tier allow some to generate income to provide for their most basic needs. Another tier, consisting of growth-oriented enterprises, provides more desirable jobs and a possible stepping stone towards the more prosperous formal sector, while also being more difficult to access. Workers were classified into either tier using a data-driven clustering technique to sort through informal sector jobs and allocate workers to either the survivalist or growth-oriented tier. This novel classification approach addresses the two most obvious shortcomings from similar studies in the literature: the method uses a variety of job attributes for classification and does not rely on arbitrary, researcher-defined threshold values.

I find that most informal sector workers in the South African economy belong to the survivalist tier, where they earn low wages. The workers in this tier are not satisfied with their jobs and would prefer to move to other jobs. The transition matrix showed that this segment of the informal sector had a lower retention rate, and workers were more likely to transition to a state of joblessness than to move to higher paying segments of the labour market. Workers in the smaller growth-oriented tier of the informal sector earn higher wages and have better socio-economic outcomes. They have better access to financial assets and have a better chance of using this segment as a springboard into the formal sector.

Having successfully identified the segments within the informal sector, I showed how human capital, household formation and other demographics determine which tier jobless work-

seekers are more likely to enter. My analysis indicated that the work-seekers who found employment in the survivalist tier were more likely to have lower levels of education, belong to the most disadvantaged population groups, and have more household obligations. The work-seekers who found employment in the growth-oriented tier came from households with better levels of income, and they typically had higher levels of schooling.

This suggests that a substantial part of the informal sector provides jobs for people who need employment to meet basic household needs in the absence of alternative sources of income. Within the informal sector, a smaller portion of more desirable jobs in growth-oriented enterprises exists, but accessing those jobs requires overcoming financial and human capital barriers. Furthermore, heterogeneity within the informal sector is gendered, meaning that most jobs in the survivalist tier are carried out by women, while many of the jobs in growth-oriented microenterprises are carried out by men.

This chapter provides a deeper understanding of the nature of employment in the informal sector from a microeconomic perspective. A large part of the informal sector acts as an employer of last resort, while there is a smaller, more entrepreneurial portion that generates higher income – but job seekers cannot enter it as easily because of the barriers to entry. These results contribute to the South African literature that attempt to determine whether low informal employment and high unemployment is due to barriers to informal sector employment or because most job-seeker would rather be unemployed over this precarious form of underemployment.

In Chapter 3, I investigated the development of total informal sector employment from a macroeconomic perspective. Total informal sector employment has been procyclical, at least since the onset of the financial crisis. This evidence is consistent with the informal sector being highly integrated with the formal sector. However, procyclicality seems at odds with the

description of the informal sector as largely acting as the employer of last resort from Chapter 2, which requires further investigation.

As the economy recovered from the global financial crisis, the growth of male informal sector employment outpaced that of female informal sector employment. I investigated the mechanisms behind this divergence and found that this is partly due to men benefitting from working in informal sector industries with a higher employment elasticity. For example, the informal construction industry is dominated by men and has a high employment elasticity, so men benefitted more from the creation of informal construction jobs during the economic upswing. On the other hand, some female-dominated informal industries, like retail, also experienced more rapid employment growth for men. For some reason, women could not take as much advantage of improving economic conditions as men and so gained fewer jobs in the informal sector. I therefore proceeded to examine the effects of human capital, household factors and social norms on informal sector employment, since these factors were also identified as important determinants of informal sector employment in Chapter 2.

Human capital factors did not appear to play an important role in this gender divergence, but I did find evidence of a role for social norms and household features. People who live with their partner are more likely to find employment in the informal sector. Having responsibilities towards children in the household pushes searchers into accepting employment. I also measured the impact of child-support grants and old-age pension on the probability of informal sector work and found an inverse relationship between the grants and employment. The probability of informal sector employment decreased with the addition of the child-support grant to the household; women had a worse decline in the likelihood of employment than men. A man's probability of informal sector employment declines when there are old-age pension recipients in the household; this effect is not as negative for women. Once I could account for the gendered differences of the household's impact on employment, the gender divergence of

informal sector employment lost its significance. This indicated that the household is very important in explaining the gender inequality within the informal sector.

These results contribute to the national and international literature on the cyclicality of informal sector employment, and provides evidence against the notion that informal employment in South Africa is countercyclical. I develop a novel decomposition technique that can identify the importance of an initial gender imbalance and industry-specific employment elasticities in driving gender differences in the cyclicality of informal sector employment. Finally, the chapter also identifies the importance of social norms and household factors that preclude vulnerable women from reaping the benefits of economic growth.

I found that household factors were also important for explaining the way women and men structured their time for job-search purposes. I found stark gender inequality in the frequency and duration of active job search. Women not only searched less often but also searched for shorter periods of time. Women were also more likely to search in time slots when they had less household obligations to fulfil and time slots that were safer for outdoor activities. These findings emphasised the scheduling constraints that deter women from participating in economic activities.

Chapter 4 uses a novel dataset to study the constraints on job search. Diary entries from the TUS revealed that some respondents who self-identify as discouraged job seekers actually engage in active job search. This suggests an additional reason to use the broad rather than the narrow definition of unemployment when assessing the extent of South African unemployment. Despite this apparent inconsistency, the analysis reveals just how infrequent active job search is in the South African labour market. This is especially concerning given the problem of large-scale and open unemployment. Despite the low frequency of search, the data

show that active job search tends to be intensive, with job seekers spending long periods of time looking for work.

As in the preceding chapters, household characteristics were confirmed to be closely linked to the behaviour of women. Job seekers who live with their partners were more likely to participate, search for a longer duration, and during more time slots. If job seekers took care of dependants in the household, they were less likely to participate in, and allocate less time to, job searching than those who did not have care-related obligations. The job seekers who had childcare responsibilities avoided participation in job search in the early morning and afternoon time slots, when children were more likely to require their attention. The unemployed who came from households with lower levels of income were more likely to participate in and allocate more time towards active search.

Overall, this dissertation paints a gloomy picture of the prospects of vulnerable women to cope with poverty. They are disadvantaged in their access to the less precarious segment of the informal sector, less able to benefit from the increased informal sector employment during periods of economic growth, and constrained in whether and when to actively looking for work. The disadvantages faced by women are multifaceted: apart from facing gender discrimination by employers, they are burdened with social norms that prescribe greater household responsibilities, face more binding physical and human capital constraints to entering decently remunerated jobs, and work in informal sector industries that are less responsive to economic upswings.

Policy Recommendations

The results from this dissertation also offer some insights for public policies aimed to redress gender imbalances in the labour market. The analysis on entry into the two informal sector tiers

suggests that social grants provide an important safety net to help women provide for households without having to resort to survivalist employment. Policies that improve the take-home pay, job security or working conditions in the survivalist tier will have positive effects on the welfare of members of poor households. Such policies include local economic development that creates job opportunities closer to where poor households live, improved safety in areas of informal sector activities and transportation subsidies. Interventions aimed at supressing or imposing additional regulation on informal sector activities may inadvertently make it more difficult for desperate job-seekers to find employment to provide for their households. Given that the survivalist tier is an employment opportunity of last resort, policies should be aimed at making entry into this tier as easy and inexpensive as possible, rather than incentivising the non-employed to enter this tier. In cases where people try to create businesses in residential areas, more care must be taken in the drafting and enforcement of residential by-laws. This may help some of the unemployed people to establish informal sector enterprises. Even more care must be taken when handling informal sector businesses in central business districts. Government programmes like Operation Clean Sweep may unintentionally target survivalist enterprises who have no option but to participate in street vending to earn an income to provide in basic needs. Furthermore, policies that help entrepreneurs overcome financial barriers to entering the growth-oriented tier - providing access to affordable loans, or entrepreneurship training or mentoring, for example – can provide a useful springboard into formal sector employment. Equity considerations suggest that women should have the first claim on access to such programmes.

For example, women are constrained from searching for work when they must take care of the children in the household. Some of the obligations that women have can be alleviated when I recognise that early childhood development centres are important not only for the child but

also for the women who take care of the children. Indirectly, the expansion of early childhood development centres could be beneficial to women's labour market outcomes.

When women participate in economic activities at off-peak times, they do so at great personal risk. I need better public safety measures to be implemented at the more dangerous times in the more dangerous areas so that women can have more freedom of movement. Another way to address this problem is by reducing travel distances from the residences of unemployed people to economic hubs by providing low-cost housing closer to business centres.

6. References

Abel, M., Burger, R., Carranza, E. and Piraino, P. 2017. *Bridging the intention-behavior gap? The effect of plan-making prompts on job search and employment.* Policy Research Working Paper No. 8181. [Online]. Washington, DC: World Bank. Available: https://openknowledge.worldbank.org/handle/10986/28358 [2018, March 17].

Anderberg, M.R. 1973. *Cluster analysis for applications*. New York: Academic Press.

Ardington, C., Case, A. and Hosegood, V. 2009. Labor supply responses to large social transfers: Longitudinal evidence from South Africa. *American Economic Journal: Applied Economics*, 1(1):22–48.

Arrow, K.J. 1972. Models of job discrimination, in A.H. Pascal (ed.). *Racial discrimination in economic life*. Lexington: D.C. Heath. 83–102.

Azarnert, L.V. 2011. Child mortality, accumulation fertility, and human capital accumulation. *Journal of Population Economics*, 19(2):285–297. Available: http://www.jstor.org/stable/20008011 [2016, October 21]

Banerjee, A., Galiani, S., Levinsohn, J., McLaren, Z. and Woolard, I. 2008. Why has unemployment risen in the New South Africa? *Economics of Transition*, 16(4):715–740.

Available: http://onlinelibrary.wiley.com/doi/10.1111/j.1468-0351.2008.00340.x/full. [2014, May 30]

Becker, G.S. 1957. The economics of discrimination: An economic view of racial discrimination, Chicago: University of Chicago Press.

Beg, F., Bickford, G., Denoon-Stevens, S.P., Harber, J., Jitsing, A., Moosajee, R. and Schmidt, D. 2014. *How to build transit oriented cities: Exploring possibilities*. Braamfontein: South African Cities Network. Available: http://www.sacities.net/wp-content/uploads/2014/09/1978_SACN_Transit_Oriented_Cities_Web.pdf. [2016, April 24]

Bertrand, M., Mullianathan, S. and Miller, D. 2003. Public policy and extended families: Evidence from pensions in South Africa. *The World Bank Economic Review*, 17(1):27–50. Available: http://wber.oupjournals.org/cgi/doi/10.1093/wber/lhg014. [2015, October 19]

Bhorat, H. 2004. Labour market challenges in the post-apartheid South Africa. *South African Journal of Economics*, 72(5):940–977.

Bhorat, H. and Goga, S. 2013. The gender wage gap in post-apartheid South Africa: A re-examination. *Journal of African Economies*, 22(5):827–848.

Blinder, A.S. 1973. Wage discrimination: Reduced form and structural estimates. *Journal of Human Resources*, 8(4):436–455.

Blunch, N.-H., Canagarajah, S. and Raju, D. 2001. The informal sector revisited: A synthesis across space and time. Social Protection Discussion Paper Series No. 0119. Washington, DC: World Bank. Available: http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/SPDiscussion-papers/Labor-Market-DP/0119.pdf. [2015, March 18]

Branson, N. and Leibbrandt, M. 2013. *Educational Attainment and Labour Market Outcomes in South Africa, 1994–2010*. OECD Economics Department Working Paper No. 1022. Paris: OECD.

Branson, N., Hofmeyr, C. and Lam, D. 2014. Progress through school and the determinants of school dropout in South Africa. *Development Southern Africa*, 31(1):106–126. Available: http://dx.doi.org/10.1080/0376835X.2013.853610. [2017, September 27]

Budlender, D. and Lund, F. 2011. South Africa: A legacy of family disruption. *Development and Change*, 42(4):925–946.

Burger, P. and Fourie, F. 2018. The informal sector, economic growth and the business cycles in South Africa: Integrating the sector into macroeconomic analysis. in F. Fourie and C. Skinner (eds). *The South African Informal Sector: Creating Jobs, Reducing poverty*., 201-225, HSRC Press. Cape Town.

Burger, R., Van der Berg, S. and Von Fintel, D. 2015. The unintended consequences of education policies on South African participation. *South African Journal of Economics*, 83(1):74–100.

Burger, R. and Woolard, I. 2005. The state of the labour market in South Africa after the first decade of democracy. *Journal of Vocational Education and Training*, 57(4):453–476.

Burns, J., Keswell, M. and Leibbrandt, M. 2005. Social assistance, gender, and the aged in South Africa. *Feminist Economics*, 5701(November):103–115.

Caliendo, M. and Kritikos, A.S. 2009. *'I want to, but I also need to': Start-ups resulting from opportunity and necessity*, IZA Discussion Paper No. 4661. Bonn: Institute for the Study of Labor (IZA). Available: http://www.econstor.eu/bitstream/10419/35884/1/618732640.pdf. [2014, June 10]

Caliński, T. and Harabasz, J. 1974. A dendrite method for cluster analysis. *Communications in Statistics – Theory and Methods*, 3(1):1–27.

Casale, D. 2004. What has the feminisation of the labour market 'bought' women in South Africa? Trends in labour force participation, employment and earnings, 1995–2001. *Journal of Interdisciplinary Economics*, 15(3–4):251–275.

Casale, D. and Posel, D. 2002. The continued feminisation of the labour force in South Africa. *South African Journal of Economics*, 70(1):156–184.

Charmes, J. 2009. Concepts, measurement and trends, in J.P. Jütting and J.R. de Laiglesia (eds). *Is informal normal? Towards more and better jobs in developing countries.* OECD. 27–62, Paris

Clark, A.E. 2003. Unemployment as a social norm: Psychological evidence from panel data. *Journal of Labor Economics*, 21(2):323–351.

Coetzee, M. 2013. Finding the benefits: Estimating the impact of the South African child support grant. *South African Journal of Economics*, 81(3):427–450. Available: http://dx.doi.org/10.1111/j.1813-6982.2012.01338.x. [2015, June 6]

D'Haese, M. and Van Huylenbroeck, G. 2005. The rise of supermarkets and changing expenditure patterns of poor rural households case study in the Transkei area, South Africa. *Food Policy*, 30(1):97–113.

Devey, R., Skinner, C. and Valodia, I. 2006. Second best? Trends and linkages in the informal economy in south Africa. Paper presented at the Development Policy Research Unit and Trade and Industrial Policy Strategies annual conference on Accelerated and Shared Growth in South Africa: Determinants, Constraints and Opportunities. 18–20 October, Johannesburg.

Dickens, W. and Lang, K. 1988. The reemergence of segmented labor market theory. *American Economic Review*, 78(2):129–134. Available: http://ideas.repec.org/a/aea/aecrev/v78y1988i2p129-34.html. [2014, April 4]

Duflo, E. 2003. Grandmothers and granddaughters: Old-age pensions and intrahousehold allocation in South Africa. *The World Bank Economic Review*, 17(1):1–25. Available: http://wber.oupjournals.org/cgi/doi/10.1093/wber/lhg013. [2016, October 21]

El Badaoui, E., Strobl, E. and Walsh, F. 2008. Is there an informal employment wage penalty? Evidence from South Africa. *Economic Development and Cultural Change*, 56(3):683–710. Available: http://www.jstor.org/stable/10.1086/533550.

Fields, G.S. 2009. Segmented Labor Market Models in Developing Countries. In H Kincaid and D. Ross (eds.) *The Oxford handbook of philosophy of economics*, 476-510, Oxford: Oxford University Press

Fields, G.S. 1990. Labour market modelling and the urban informal sector: Theory and evidence, in D. Turnham, B. Salomé and A. Schwarz (eds). *The Informal Sector Revisited*. , 49-69, Paris: OECD Development Centre

Fiess, N.M., Fugazza, M. and Maloney, W.F. 2010. Informal self-employment and macroeconomic fluctuations. *Journal of Development Economics*, 91(2):211–226. Available: http://linkinghub.elsevier.com/retrieve/pii/S0304387809000996.

Finegan, T.A. 1978. Improving my information on discouraged workers. *Monthly Labor Review*, 101(9):15–25.

Fischer, M.M. and Nijkamp, P. 1987. Regional labour markets: Analytical contributions and cross-national comparisons. Amsterdam: Elsevier Science.

Floro, M.S. and Komatsu, H. 2011. Gender and work in South Africa: What can time-use data reveal? *Feminist Economics*, 17(4):33–66.

Goldin, B.C. 2014. A grand gender convergence: Its last chapter. *American Economic Review*, 104(4):1091–1119.

Gower, J. 1971. A general coefficient of similarity and some of its properties. *Biometrics*, 27(4):857–871. Available: http://www.jstor.org/stable/2528823.

Greene, W.H. 2005. *Censored data and truncated distributions*. NYU Working Paper No. EC-05-08. Available: https://ssrn.com/abstract=1282532.

Grimm, M., Knorringa, P. and Lay, J. 2012. Constrained gazelles: High potentials in West Africa's informal economy. *World Development*, 40(7):1352–1368. Available: http://linkinghub.elsevier.com/retrieve/pii/S0305750X12000460.

Günther, I. and Launov, A. 2012. Informal employment in developing countries: Opportunity or last resort? *Journal of Development Economics*, 97:88–98. Available: http://linkinghub.elsevier.com/retrieve/pii/S0304387811000046.

Hanson, S. and Pratt, G. 1988. Spatial dimensions of the gender division of labor in a local labor market. *Urban Geography*, 9(2):180–202.

Heintz, J. and Pollin, R. 2003. *Informalization, economic growth and the challenge of creating viable labor standards in developing countries*. Political Economy Research Institute Working Paper No. 60. Amherst: University of Massachusetts.

Heintz, J. and Posel, D. 2008. Revisiting informal employment and segmentation in the South African labour market. *South African Journal of Economics*, 76(1):26–44. Available: http://onlinelibrary.wiley.com/doi/10.1111/j.1813-6982.2008.00153.x/full.

Hoang, L.A. and Yeoh, B.S.A. 2011. Breadwinning wives and "left-behind" husbands: Men and masculinities in the Vietnamese transnational family. *Gender and Society*, 25(6):717–739.

Hussmanns, R. 2004. Statistical definition of informal employment: Guidelines endorsed by the 17th International Conference of Labour Statisticians (2003). Paper presented at the 7th Meeting of the Expert Group on Informal Sector Statistics (Delhi Group). 2–4 February, New Delhi.

Jackman, R. and Layard, R. 1991. Does long-term unemployment reduce a person's chance of a job? A time-series test. *Economica*, 58(229):93–106.

Johnson, R.A. and Wichern, D.W. 2007. *Applied multivariate statistical analysis*. Upper Saddle River, NJ: Pearson/Prentice Hall.

Kanfer, R., Wanberg, C.R. and Kantrowitz, T.M. 2001. Job search and employment: A personality-motivational analysis and meta-analytic review. *Journal of Applied Psychology*, 86(5):837.

Kerr, A. 2017. Tax(i)ing the poor? Commuting costs in South African cities. *South African Journal of Economics*, 85(3):321–340.

Kerr, A. and Wittenberg, M. 2015. Sampling methodology and fieldwork changes in the October Household Surveys and Labour Force Surveys. *Development Southern Africca*. 32(5):603-612.

Kimmel, J. and Connelly, R. 2006. *Is mothers' time with their children home production or leisure?* IZA Discussion Paper No. 2058. Bonn: Institute for the Study of Labor (IZA).

Kingdon, G. and Knight, J. 2004. Unemployment in South Africa: The nature of the beast. *World Development*, 32(3):391–408. Available: http://linkinghub.elsevier.com/retrieve/pii/S0305750X03002407.

Kingdon, G. and Knight, J. 2006. The measurement of unemployment when unemployment is high. *Labour Economics*, 13:291–315.

Kingdon, G. and Knight, J. 2007. Unemployment in South Africa, 1995–2003: Causes, problems and policies. *Journal of African Economies*, 16(5):813–848.

Klasen, S. and Woolard, I. 1999. Levels, trends and consistency of employment and unemployment figures in South Africa. *Development Southern Africa*, 16(1):3–35.

Klasen, S. and Woolard, I. 2008. Surviving unemployment without state support: Unemployment and household formation in South Africa. *Journal of African Economies*, 18(1):1–51. Available: http://jae.oxfordjournals.org/cgi/doi/10.1093/jae/ejn007.

Krueger, A.B. and Mueller, A.I. 2012. The lot of the unemployed: A time use perspective. *Journal of the European Economic Association*, 10(4):765–794. Available: http://doi.wiley.com/10.1111/j.1542-4774.2012.01071.x.

La Porta, R. and Shleifer, A. 2014. Informality and development. *Journal of Economic Perspectives*, 28(3):109–126.

Layard, P.R.G. 2005. *Happiness: Lessons from a new science*. New York: Penguin Press.

Lee Badgett, M.V. and Folbre, N. 1999. Assigning care: Gender norms and economic outcomes. *International Labour Review*, 138(3):311–326.

Leibbrandt, M., Woolard, I., McEwen, H. and Koep, C. 2010. *Employment and inequality outcomes in South Africa*. University of Cape Town and Southern Africa Labour and Development Research Unit. Available: http://www.oecd.org/employment/emp/45282868.pdf.

Leibbrandt, M., Woolard, I., Finn, A. and Argent, J. 2010. *Trends in South African income distribution and poverty since the fall of apartheid*. OECD Social, Employment and Migration Working Paper No. 101. Paris: OECD. Available: http://dx.doi.org/10.1787/5kmms0t7p1ms-en.

Ligthelm, A.A. 2005. Informal retailing through home-based micro-enterprises: The role of spaza shops. *Development Southern Africa*, 22(2):199–214.

Lloyd, N. and Leibbrandt, M. 2018. Entry into and exit from informal enterprise ownership in South Africa in F. Fourie and C. Skinner (eds). *The South African Informal Sector: Creating Jobs, Reducing poverty*.151-178, HSRC Press. Cape Town.

Lloyd, N. and Leibbrandt, M. 2013. How do the non-searching unemployed feel about their situation? On the definition of unemployment. Working Paper Econ3x3

Loayza, N.V. and Rigolini, J. 2006. *Informality trends and cycles*. Policy Research Working Paper No. WPS 4078. Washington, DC: World Bank. Available: http://documents.worldbank.org/curated/en/254671468141896360/Informality-trends-and-cycles.

Loayza, N.V. and Rigolini, J. 2011. Informal employment: Safety net or growth engine? *World Development*, 39(9):1503–1515. Available: http://linkinghub.elsevier.com/retrieve/pii/S0305750X11000222.

Lucas, R.E., Clark, A.E., Georgellis, Y. and Diener, E. 2004. Unemployment alters the set point for life satisfaction. *Psychological Science*, 15(1):8–13. Available: http://pss.sagepub.com/lookup/doi/10.1111/j.0963-7214.2004.01501002.x.

Lund, F. 1998. *Women street traders in urban South Africa: A synthesis of selected research findings*. CSDS Research Report No 15. Durban: University of Natal. Available: http://wiego.org/sites/wiego.org/files/publications/files/Lund-women-street-traders.pdf.

Maloney, W.F. and Bosch, M. 2007. The informal labor market in motion: Dynamics, cycles, and trends, in P.E. Guillermo (ed). *Exit and exclusion*. Washington, DC: International Bank for Reconstruction and Development / The World Bank. 101–131.

Manning, C. 1993. International experiences of informal sector activity and the lessons for South Africa. *Transformation*, 22:51–69. Available: http://www.kznhass-history.net/ojs/index.php/transformation/article/viewFile/630/446.

Meagher, K. 2013. Unlocking the informal economy: A literature review on linkages between formal and informal economies in developing countries. WIEGO Working Paper No. 27. Cambridge, MA: WIEGO.

Mkhize, S., Dube, G. and Skinner, C. 2013. *Informal economy monitoring study: Street vendors in Durban, South Africa*. Manchester, UK: WIEGO. Available: http://wiego.org/sites/default/files/publications/files/IEMS-Durban-Street-Vendors-City-Report-English.pdf.

Mortensen, D.T. 1986. Job search and labor market analysis, in O. Ashenfelter and R. Layard (eds). *Handbook of labor economics*, vol. 2. Elsevier Science. 849–919.

Moser, C. 1978. Informal sector or petty commodity production: Dualism or dependence in urban development? *World Development*, 6(9/10):1041–1064. Available: http://www.sciencedirect.com/science/article/pii/0305750X78900621.

Musoni, F. 2010. Operation Murambatsvina and the politics of street vendors in Zimbabwe. *Journal of Southern African Studies*, 36(2):301–317.

National Treasury. 2008. Chapter 6: Social security and national health insurance, *National Budget Review*. Pretoria.

National Treasury. 2012. Chapter 6: Social security and national health insurance, *National Budget Review*. Pretoria.

Nattrass, N. and Walker, R. 2005. Unemployment and reservation wages in working-class Cape Town. *South African Journal of Economics*, 73(3):498–509. Available: http://onlinelibrary.wiley.com/doi/10.1111/j.1813-6982.2005.00034.x/abstract.

Nawyn, S.J., Reosti, A. and Gjokaj, L. 2009. Gender in motion: How gender precipitates international migration, in V. Demos and M.T. Segal (eds). *Perceiving gender locally, globally, and intersectionally*. Bingley: Emerald. 175–202.

Neutens, T., Schwanen, T. and Witlox, F. 2011. The prism of everyday life: Towards a new research agenda for time geography. *Transport Reviews*, 31(1):25–47. Available: http://www.tandfonline.com/doi/abs/10.1080/01441647.2010.484153.

Oaxaca, R. 1973. Male-Female Wage Differentials in Urban Labor Markets. *International Economic Review*, 14(3):693–709.

Obstfeld, M., Rogoff, K.S. and Wren-Lewis, S. 1996. *Foundations of international macroeconomics*. Cambridge, MA: MIT Press.

OECD, 2008. *OECD Economic Surveys: South Africa – Economic Assessment*. Available: http://www.treasury.gov.za/publications/other/OECD%20-%20South%20Africa%20Economic%20Assesment.pdf.

OECD, 2010. *OECD Economic Surveys: South Africa 2010*. Available: http://www.treasury.gov.za/comm_media/press/2010/2010071901.pdf.

Olsen, R.J. 1978. Note on the uniqueness of the maximum likelihood estimator for the Tobit model. *Econometrica*, 46(5):1211–1215.

Parreñas, R.S. 2005. Children of global migration: Transnational families and gendered woes. Stanford, CA: Stanford University Press.

Phelps, E.S. 1972. The statistical theory of racism and sexism. *American Economic Review*, 62(4):659–661.

Philip, K. 2010. Inequality and economic marginalisation: How the structure of the economy impacts on opportunities on the margins. *Law, Democracy and Development*, 14:105–132.

Posel, D., Casale, D. and Vermaak, C. 2014. Job search and the measurement of unemployment in South Africa. *South African Journal of Economics*, 82(1):66–80.

Posel, D., Fairburn, J.A. and Lund, F. 2006. Labour migration and households: A reconsideration of the effects of the social pension on labour supply in South Africa. *Economic Modelling*, 23(5):836–853. Available: http://linkinghub.elsevier.com/retrieve/pii/S0264999305000970.

Potts, D. 2008. The urban informal sector in sub-Saharan Africa: From bad to good (and back again?). *Development Southern Africa*, 25(2):151–167.

Ranchhod, V. and Dinkelman, T. 2007. *Labour market transitions in South Africa: What can I learn from matched labour force survey data?* Southern Africa Labour and Development Research Unit Working Paper Number 14. Cape Town: SALDRU, University of Cape Town.

Rankin, N. and Roberts, G. 2011. Youth unemployment, firm size and reservation wages in South Africa. *South African Journal of Economics*. 79(2):128–145.

Rankin, N., Roberts, G. and Schoer, V. 2012. *The challenges that young South Africans face in accessing jobs: Could a targeted wage subsidy help?* Johannesburg: African Micro-Economic Research Unit (AMERU).

Reich, M., Gordon, D.M. and Edwards, R.C. 1973. Dual labor markets: A theory of labor market segmentation. *American Economic Review*, 63(2):359–365. Available: http://www.jstor.org/stable/1817097.

Rogan, M. and Skinner, C. 2018. The size and structure of the South African informal sector 2008–2014 in F. Fourie and C. Skinner (eds). *The South African Informal Sector: Creating Jobs, Reducing poverty*.77-102, HSRC Press. Cape Town.

Rogerson, C.M. 2000. Emerging from apartheid's shadow: South Africa's informal economy. *Journal of International Affairs*, 53(2):673–697.

Rogerson, C.M. 2016. Progressive rhetoric, ambiguous policy pathways: Street trading in inner-city Johannesburg, South Africa. *Local Economy*, 31(1–2):204–218.

Santarelli, E. and Vivarelli, M. 2006. Entrepreneurship and the process of firms' entry, survival and growth. *Industrial and Corporate Change*, 16(3):455–488. Available: http://icc.oxfordjournals.org/content/16/3/455.abstract.

Schöer, V. and Leibbrandt, M. 2006. Determinants of job search strategies: Evidence from the Khayelitsha/Mitchell's Plain survey. *South African Journal of Economics*, 74(4):702–724.

Social Law Project. 2014. *Johannesburg street traders halt Operation Clean Sweep*. WIEGO Law and Informality Resources. Cambridge, MA: WIEGO.

South African Reserve Bank. 2006. Annual Economic Report, SARB, Pretoria, Available: https://www.resbank.co.za/Lists/News%20and%20Publications/Attachments/3071/aer2006.pdf [2017, October 30]

Spaull, N. 2013. Poverty and privilege: Primary school inequality in South Africa. *International Journal of Educational Development*, 33:436–447.

Statistics South Africa. 2001. *Labour Force Survey metadata*. Pretoria: Statistics South Africa.

Statistics South Africa. 2010. *Statistical release: Quarterly Labour Force Survey*. Pretoria: Statistics South Africa.

Statistics South Africa. 2011. *Statistical release: Quarterly Labour Force Survey*. Pretoria: Statistics South Africa.

Statistics South Africa. 2013. *A survey of time use 2010*. Pretoria: Statistics South Africa.

The Presidency. 2006. *A Catalyst for Accelerated and Shared Growth-South Africa* [Media Briefing]. 6 February. Available: https://www.sahistory.org.za/sites/default/files/asgibackground.pdf [2017, April 30]

Thrift, N. 1977. *An introduction to time-geography*. Concepts and techniques in modern geography (CATMOG) No. 13. Norwich: Geo Abstracts, University of East Anglia.

Tryon, R.C. 1939. Cluster analysis: Correlation profile and orthometric (factor) analysis for the isolation of unities in mind and personality. Ann Arbor: Edwards Brothers.

Valodia, I. and Devey, R. 2010. Formal-informal economy linkages: What implications for poverty in South Africa? *Law, Democracy and Development*, 14. Available: https://www.ajol.info/index.php/ldd/article/view/68282.

Van der Berg, S. and Bredenkamp, C. 2002. Devising social security interventions for maximum poverty impact. Social Dynamics, 28(2):39–68. Available: http://dx.doi.org/10.1080/02533950208458732.

Van der Berg, S., Siebrits, K. and Lekezwa, B. 2010. *Efficiency and equity effects of social grants in South Africa*. Stellenbosch Economic Working Paper No. 15/10. Available: http://ssrn.com/abstract=1727643.

Venter, J.C. 2011. Business cycles in South Africa during the period 2007 to 2009. *South African Reserve Bank Quarterly Bulletin*, 260:61–66.

Verick, S. 2012. Giving up job search during a recession: The impact of the global financial crisis on the South African labour market. *Journal of African Economies*, 21(3):373–408.

Waerness, K. 1984. The rationality of caring. *Economic and Industrial Democracy*, 5(2):185–211.

Walters, J. 2013. Overview of public transport policy developments in South Africa. *Research in Transportation Economics*, 39(1):34–45. Available: http://dx.doi.org/10.1016/j.retrec.2012.05.021.

Weiss, A. 1995. Human capital vs. signalling explanations of wages. *Journal of Economic Perspectives*, 9(4):133–154.

Woodward, D., Rolfe, R. and Ligthelm, A. 2014. Microenterprise, multinational business support, and poverty alleviation in South Africa's informal economy. *Journal of African Business*, 15(1):25–35.

Woolard, I. and Klasen, S. 2005. Determinants of income mobility and household poverty dynamics in South Africa. *Journal of Development Studies*, 41(5):865–897.

Yu, D. 2012. Defining and measuring informal employment in South Africa. *Development Southern Africa*, 29(1):157–175. Available: http://www.tandfonline.com/doi/abs/10.1080/0376835X.2012.645649.