Agricultural change and farmworker living standards in post-apartheid South Africa

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Declaration

I, Leonard le Roux, hereby declare that the work on which this dissertation is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university. I empower the university to reproduce for the purpose of research either the whole or any portion of the contents in any manner whatsoever.

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Abstract

Commercial agriculture in South Africa has been subject to accelerated regulatory and economic change in the time since the country's democratization. This dissertation focusses on some of the interactions of these changes with the prospects of low-income farmworkers and farm dwellers through exploring two interlinked questions. The first of these asks whether consolidation in the industry has extended to growing firm size and in-turn, whether farmworkers in larger firms earn higher wages than those in small firms. An analysis of the firm-size earnings relationship using long run labour survey data is discussed in the context of current debates on agrarian policy. The second question relates to the process of rural-urban migration off commercial farms and into urban areas in the post-apartheid period. Using a panel of individuals and in so doing, controlling for unobserved individual heterogeneity and initial household fixed effects, a difference in differences approach is used to estimate the impacts of migration on various measures of individual living standards. Together these two questions attempt to characterise aspects of the changing nature of life on farms.

The results suggest that there exists a significant firm-size earnings premium for farmworkers and that this may be increasing over time. In addition the National Income Dynamics Study (NIDS) data suggests that migration off farms has mixed implications for living standards, but is associated with significant gains in per-capita income, electricity and sanitation access.

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Chapter 1

Introduction

Two major themes characterise the economic and legislative changes that have impacted on South African commercial agriculture in the post-apartheid period. The first of these is an acceleration of policies of economic liberalisation at a time coinciding with the country's insertion into global food value chains (Barrientos & Kritzinger, 2004). This included the removal of trade tariffs, the dissolution of marketing boards and the removal of various producer subsidies and a decline in extension services (Piesse, Doyer, Thirtle, & Vink, 2005; Bernstein, 2013). The second is the introduction of labour legislation, including the introduction of a minimum wage, the enshrining of basic conditions of employment and tenure security linked to policy goals of land reform (Atkinson, 2007; Conradie, Piesse, Thirtle, & Vink, 2018). As a result, the industry has undergone a process of consolidation (Liebenberg & Pardey, 2012), and adaptation that has led to a restructuring of the way in which farming enterprises operate in relation to farmworkers.

The underlying aim of this dissertation is to contribute to an understanding of how this process of agricultural change has interacted with the living standards of low-income farmworkers and farm dwellers - the direct constituents of the industry - and what this might mean going forward. With this in mind, two questions form the central chapters of this dissertation.

In the first, the Post Apartheid Labour Market Series (PALMS) data is used to ask whether the documented consolidation in the the agricultural sector has extended to firm size; what this implies for farmworker earnings and in turn what this may imply for agrarian policy. There is significant support in various policy documents and current academic debate for a model of small-scale farming, both as a mechanism for land reform and employment growth (Cousins, Genis, & Clarke, 2018; National Planning Commission,

2013). However, recent work has shown that the economic and legislative environment in which farm enterprises operate make it difficult for small farm enterprises to compete and comply with labour legislation (Piek & von Fintel, 2017). Chapter 3 extends this line of inquiry with a focus on farmworker earnings in small versus large firms.

The second question relates to the large scale migration of low-income farm dwellers and farmworkers into urban areas. Chapter 4 uses individual level panel data from the five wave National Income Dynamics Study panel (NIDS) and a difference-in-differences approach to ask what the impacts of migration are on the living standards of off-farm migrants. This allows for the control of individual-level fixed heterogeneity, initial household fixed effects as well as various observable individual factors that may influence both migration and living standards outcomes. Ostensibly migration takes place due to a range of both voluntary and involuntary factors: the allure of opportunities in cities compared to slow-moving rural economies, as well as the effect of involuntary farm-evictions. While the economic literature has found urbanization to be central to long term economic development (Collier & Venables, 2016), the microeconomic implications of this change are not fully understood in South Africa and empirical studies using panel data are few. Recent work has used a descriptive methodology to understand how migration from rural areas in general influences access to employment and incomes (Visagie & Turok, 2017). In addition, Garlick, Leibbrandt, and Levinsohn (2016) provide estimates of the impacts of migration on per capita incomes in South Africa. However, in this chapter the focus is explicitly on farms given the important differences that exist between farm and traditional rural areas.

The motivation for a focus on farmworkers stems firstly from the economic importance of commercial agriculture as a source of employment and livelihoods. While its contribution to GDP has fallen steadily and is now around 2.2% (Department of Agriculture, Forestry and Fisheries, 2018), the sector employed 835000 people in 2017, representing 5.2% of the labour force. It is particularly important for the employment of low-skilled workers in an otherwise skills-intensive economy. Quarterly Labour Force Survey (QLFS) data for 2015 shows that 10% of workers with less than 8 years of education are employed as farmworkers[1]. As such, the sector is central to the country's National Development Plan (NDP) for employment growth (National Planning Commission, 2013). A second motivation is that farmworkers on commercial farms are and have historically been some of the most vulnera-

[1] Own calculations using PALMS (Kerr, Lam, & Wittenberg, 2017)

ble workers in the formal economy (Bhorat & Leibbrandt, 1999), and recent literature suggests that producer responses to some post-apartheid policy may have had mal-effects on the most vulnerable workers within the sector (Conradie et al., 2018). Finally, the changing nature of South African commercial agriculture has the potential to present insights for other countries on the continent given South Africa's comparatively early structural transformation.

The next section provides an overview of agricultural policy change in the post-apartheid period. Chapter 3 presents evidence that the proportion of farmworkers employed in large firms is increasing and provides preliminary estimates of the firm-size earnings relationship for farmworkers. This is discussed in light of current debates on agrarian policy. Chapter 4 presents the econometric strategy to examine the material consequences of migration of low-income farm dwellers into urban areas. This is discussed in light of current debates on farmworker housing policy. Chapter 5 concludes.

Chapter 2

Agricultural change in post-apartheid South Africa

2.1 Overview of key economic and policy shifts in commercial agriculture

The agricultural sector in South Africa has a dualistic structure, comprised on the one hand of a well-established and increasingly productive commercial sector and on the other, an under-resourced and largely subsistence based sector existing under communal land tenure arrangements in the former homelands (Liebenberg & Pardey, 2012). Given this dualism, which results in the existence of two institutionally distinct forms of agriculture in South Africa, the economic and development challenges in rural South Africa are different based on which of these two settings they fall under. The focus of this dissertation is on low-income residents and farmworkers on commercial farms who form a distinct, historically constructed aspect of South African farms and are deeply rooted in the their social fabric (Du Toit, 1994).
Commercial agriculture in South Africa has undergone significant change in the past 40 years. Historically the sector was a strong political support base for the National Party, central to a goal of food self sufficiency and the belief that the provision of low-cost staple foods that would help subdue widespread calls for political change. As a result of these linkages between the agricultural industry and the state, commercial farmers were highly subsidised from the mid to late 20th century, introducing a range of distortions on the industry. These policies favouring white commercial agriculture manifested, amongst others, as subsidies on electricity and fuel prices, trade tariffs, agricultural extension services, access to credit and agricultural

marketing boards (Liebenberg, 2013; Piesse et al., 2005; Greyling, Vink, & Mabaya, 2015). Concurrently with direct support for white commercial agriculture, the development of black smallholder farmers in the homelands was controlled and suppressed by policies such as Betterment Planning and the impact of land disposession, reducing competition for white producers and creating a supply of cheap labour (Pienaar & Von Fintel, 2014; Piesse et al., 2005). The proliferation of pass laws controlling the movement of black South Africans from the 1960's onwards were rolled out in part to appease political demands from white farmers who were facing labour shortages as a result of competition for labour with the mines and urban areas (Visser, 2016; Morris, 1976).

In the 1980's there was a drastic change in this policy landscape. A period of economic liberalisation started in the late 1970's and resulted in a retraction of government support for the sector (Liebenberg, 2013; Greyling et al., 2015). The trend continued with the democratic transition in the early 1990's, in step with the formation of the World Trade Organisation (WTO) in 1995, and strong global policy support for economic liberalisation. In South Africa, this support for economic liberalisation was coupled with a vision of smallholder focused land reform encouraged by the World Bank at the time of the democratic transition(The World Bank, 1993; Greyling et al., 2015; Williams, 1996). The early 1990's saw South Africa lowering trade tariffs to levels significantly below those stipulated in the Marrakech Agreement and the share of government spending going to agriculture dropped from 5% in the early 1980's to below 1.5% in 2010 (Sandrey, Punt, Jensen, & Vink, 2011; Liebenberg, 2013). Marketing boards, which were important in representing South African products in international markets, were abolished[1].

Table 2.1 provides an overview of broad sectoral changes in Agriculture and illustrates the changing nature of the industry in the past 30 years. The contribution of agriculture to gross value added declined from 4.1% in 1993 to 2.4% in 2016 and its contribution to total employment declined from 14% to 6% in the same period. While employment fell sharply in the early 1990's, a continuation a trend of labour shedding that started in the 1960's (when the sector employed around 1.6 million people), the number of workers is now around 800 000[2]. Within-sectoral shifts have also occurred, in particular with the marked decline in the share of agricultural income from field crops

[1]The marketing boards in the sugarcane sector were not reformed as extensively (Greyling et al., 2015).

[2]This figure is based on a broad definition of employment in agriculture, forestry or fisheries.

like wheat and maize[3]. The relative shares of export oriented horticultural crops such as citrus and table grapes as well as products such as wine have grown considerably, along with the value in animal production.

Table 2.1: South African commercial agriculture: summary statistics

	1993	1997	2002	2007	2012	2016
Number of farming units	57,980	60,938	45,818	39,966		
Average farm size (ha)	1,308	1,640		2,113	2,367	
Workers ('000)	1,093	966	805	846	693	881
Share of total employment (%)	14	13	13	8	5	6
Producer support (% of gross farm reciepts)		10.7	10.1	5.1	3.5	2.3
Agricultural share of total Gross Value Added (GVA)	4.1	4.0	3.7	3.0	2.4	2.4
Agricultural share of Gross Domestic Product (GDP)	3.8	3.7	3.4	2.6	2.2	2.2
Gross value added in agriculture (R'000)	16,811	25,963	41,197	55,762	70,592	94,757
GVA share: Field Crops (% of agricultural GVA)	36	34	40	23	28	23
GVA share: Horticulture (% of agricultural GVA)	21	23	23	24	25	30
GVA share: Animal Production (% of agricultural GVA)	43	42	37	53	47	47
Maize yield (t/ha)	3.1	2.4	2.9	4.5	4.2	6.4
Wheat yield (t/ha)	1.9	1.8	2.6	3.0	3.7	3.8

Source: GVA and employment data from the Abstract of Agricultural Statistics (Statistics South Africa, 2018), yield data from Grain SA (2018), Number of farming units and farm size data from Liebenberg (2013), producer support data from OECD (2017). *Notes:* The 1993 farm size figure is based on averages accross size categories presented in Liebenberg (2013) and 2012 figure is based on an estimate for 2010 by the same author. A continuous series of farm number and size estimates is presented in Annex A in the appendix.

One result of this period of economic liberalisation was a marked increase in farm productivity as well as a process of consolidation in the industry. In the period between 1993 and 2016 yields in wheat and maize for example both doubled (Grain SA, 2018). Marginal land can no longer be farmed profitably without government support and the openness to international competition in local and export markets as well as the dominance of oligopolistic supermarket chains in the retail sector accentuated the importance of economies of scale, making it increasingly difficult for smaller producers to compete. This is also linked to the rise of global food value chains and South Africa's insertion into these in the 1990's (Barrientos & Kritzinger, 2004). Farm sizes (in hectares) have increased while the number of commercial farming units have decreased[4] (Greyling et al., 2015). The 100 largest enterprises (by income) now contribute 26.9% of agricultural income (Statistics South Africa, 2017). With regards to farm labour, the share of elementary farmworkers working on farms with over 50 employees, increased from 29% in

[3]See figure 6.2 in Annex A in the Appendix.

[4]see Figure 6.1 in Annex A.

the year 2000, to 41% in 2015[5].

2.2 Labour and regulatory changes

Up until 1993, farmworkers were not covered by any of the central labour laws of South Africa (Centre for Rural Legal Studies, 1994). In the 1990's, the constitutional framework brought with it the introduction of a range of labour legislation. Before this, relations between farmers and farmworkers were virtually unregulated by the state and deeply affected by historical social structures of paternalism that exist on farms in South Africa (Du Toit & Ally, 2003). The enshrining of labour rights (at least in word), along with the government's stated goal of land reform and its associated perceived threat to property rights constituted a period of substantial change for the sector.

Table 2.2 provides an overview of major regulatory changes that impacted the agricultural sector in the post-apartheid period. In addition to the economic policy shifts, shifts in labour legislation played an important role in the changing nature of the sector. The Agricultural labour act (No.147 of 1993) first extended (apartheid-era) basic conditions of employment to farming activities. The Labour relations Act (No.66 of 1995) regulated the rights of trade unions and created a framework for collective bargaining. It also established the Commission for Conciliation, Mediation and Arbitration (CCMA)and labour courts, allowing for the contesting of unfair labour and dismissal practices. The Land Reform (Labour Tenants) Act (No.3 of 1996) provided preliminary tenure security for labour tenants on farms and the Extension of Security of Tenure Act (ESTA) (No.62 of 1997) broadened tenure rights, facilitated long term security of tenure for farm dwellers and regulated the conditions under which persons could be evicted from land not belonging to them. This included the condition that land owners would require a court order in order to evict a tenant.

ESTA has been seen as one catalysing factor behind evictions of low income farm dwellers by employers, who perceived it (along with policy goals of land reform) to constitute a threat to their property rights (Visser, 2016; Atkinson, 2007). It has been criticised from both sides of the political spectrum a) for putting in place onerous processes for employers to evict occupants of their land, b) for creating a legal framework under which evictions can lawfully be carried out while not being accompanied by legal resources through which farm dwellers can contest the process. The Basic Conditions of Em-

[5]This trend is discussed in more detail in Chapter 3

ployment Act (No.75 of 1997) aligned labour practices to the constitution and and the obligations of South Africa as a member of the International Labour Organisation (ILO).

In a period of ten years, the legislated regulation of labour relations on farms changed drastically. Atkinson (2007) attests to the unintended consequences (such as evictions and labour shedding) of the insertion of this rights-based legislation onto a social structure that had for centuries operated outside of it. Barrientos and Kritzinger (2004) attests to increasing casualisation of the labour force in the export fruit sector, as farmers are hesitant to take on the risk, responsibility, and economic costs associated with taking on more permanent workers. Conradie (2007) on the other hand, in research based on a panel of employers in the table grape sector found little evidence of increasing levels of casualisation compared to a similar study in 1976 (Levy, 1976)[6].

Labour legislation held both the promise of improved working conditions as well as the risk of a higher implicit cost to labour that encourages job-shedding and antagonising farm owners.

Other regulatory changes also had an impact on the sector. In the period between 1999 and 2000 a re-demarcation and rationalisation of South Africa's district municipalities took place and the number of municipalities went from 843 to 284. Sutcliffe (2002) provides an overview of this process that Atkinson (2007) has argued led to an urban bias in rural administrations and resulted in a decline in rural service delivery, and political representation, placing further pressure on farming enterprises. The National Water Act (No.36 of 1998) resulted in a transition away from riparian water rights[7] towards the allocation of water use licenses by the national Department of Water and Sanitation. While bringing South African water policy in line with global best-practice, this increased administrative burdens, put water allocation at the discretion of centralised and at times under-capacitated decision makers and divorced property rights from water-use rights, given that licenses are non-transferable (Backeberg, 2005; Karodia & Weston, 2001). van Koppen and Schreiner (2018) suggest the water licensing system is also still biased towards large producers.

In addition, the industry has also been subject to two minimum wage shocks. The first occurred in 2003, when the sectoral determination for agriculture was first introduced and the second in March 2012 when, after a

[6] Conradie (2007), does caveat this finding by maintaining that constant levels of casual seasonal jobs are not evidence per se that outsourcing is not occurring and on the rise.

[7] Under which users have the right to water systems located within or adjacent to their properties.

Table 2.2: Major policy changes relating to agriculture in post-apartheid South Africa

1993	Agricultural Labour Act.
1994	Uruguay Round; Marrakesh Agreement; Restitution of Land Rights Act.
1995	Labour Relations Act.
1996	Land Reform (Labour Tennants) Act; Marketing of Agricultural Products Act; dismantling marketing control boards[a].
1997	Extension of Security of Tenure Act; Basic Conditions of Employment Act; Water Services Act; Removal of export subsidies, White Paper on Land Policy.
1998	Employment Equity Act, National Water Act.
1999	Skills Development Levies Act, Municipal Demarcation Act.
2000	Number of municipalities reduced from 843 to 284[b].
2001	Unemployment Insurance Act..
2003	Minimum sectoral determination for agriculture introduced, representing a 25% and 55% increase from overall mean wages for Area A and B workers respectively[c].
2011	Green Paper on Land Reform..
2013	51% increase in Agricultural Sectoral Determination..
2019	National Minimum Wage, with condition that farm workers initially be paid R18 per hour..

[a] see Greyling et al. (2015) for an overview.

[b] see Sutcliffe (2002) for an overview of these changes

[c] Based on mean hourly wages in Bhorat, Kanbur, and Stanwix (2014) and hourly minima prescribed by the Department of Labour in Sectoral Determination 8, 2002.

period of protest action centred in the export-oriented horticultural sector in the Western Cape, the sectoral determination in agriculture was raised

by 51% and extended to the entire industry. Bhorat et al. (2014), using a difference in differences specification find significant negative effects of the initial introduction of the minimum wage, both on absolute employment as well as hours of work. This was extended by Piek and von Fintel (2017) who provide evidence of heterogeneous employment effects of the introduction of the 2003 sectoral determination on small and large firms. They find that negative employment effects were much more pronounced in small firms which were unable to pass the additional cost on to consumers. Relating their work to the 2012 increase, Conradie et al. (2018) use firm-level data for the Western Cape wine industry and find evidence of high labour elasticity wages for casual workers. These results suggest heterogeneous employment effects of minimum wages for permanent and casual workers.

Despite having very little material success when compared to their goals, an underlying policy stance towards land reform and the introduction of a mechanism for land restitution in the post-apartheid era are additional factors that have shaped decisions within commercial agriculture. The 1994 Reconstruction and Development Program (RDP) aimed for 30% of white commercial farming land to be transfered to poor black South Africans (High Level Panel, 2017). In addition, the White Paper on Land Policy released in 1997 specifically targeted farmworkers and labour tenants as intended beneficiaries of land reform (of Land Affairs, 1997). This was followed by the Land Redistribution for Agricultural Development (LRAD) policy from 2001-2010 and the Pro-active Land Acquisition Strategy (PLAS) from 2006 to today (High Level Panel, 2017). In addition, the Restitution of Land Rights Act of 1994 allowed a person or community dispossessed of their land after 1913 to lodge a claim for the return of that property or for equitable redress.
Aimed at facilitating historical redress and bringing about a more equitable distribution of land, there policies were perceived by many farmers as direct threat to their property rights. This perception was no doubt exacerbated by policy uncertainty and inflammatory public pronouncements. The extent to which the land reform and restitution processes affected levels of investment, employment and evictions in commercial agriculture is not clear, as no rigorous studies exist, but it is unlikely that they would have had no effect.

2.3 Discussion

The aim of this chapter has been to illustrate that the agricultural sector has been subject to a range of economic and regulatory shocks in the post-apartheid period and as a result has undergone significant change itself. In one sense, many of the policy changes can be seen as a rationalisation of distortionary policies that existed under apartheid, such as the high levels of government support. Other changes are part of historical and global trends to which the industry has been adjusting. In addition to these longer term trends, the legislative changes in the late 1990's and early 2000's occurred in quick succession and causal mechanisms relating to their impacts are complicated by the concurrent effects of various policies at once. It is likely that the impacts of various labour market policies interacted with each other as well as with those of economic shifts.

Two conclusions of the effects of these changes are drawn. The first is that various processes of consolidation have been and continue to be taking place in the agricultural sector. This includes a decline in the number of farming enterprises and an increase in average farm area. The next chapter discusses whether this has translated into growing average firm size and the implications of this. The second conclusion is that the combination of economic changes and labour legislation has resulted in increased formalisation of relations between employers and employees on farms. Paternalist relationships have partly given way and their wake, formalised (not necessarily permanent or fair) relations have emerged that have had mixed implications for living standards of farmworkers (Barrientos & Kritzinger, 2004; Atkinson, 2007; Ewert & Du Toit, 2005). One of the implications of this formalization has been a transition away from the traditional institutional structure of farms. Increasingly, farmworkers are living in urban settings, as opposed to on the farm in housing provided by the owner (Visser, 2016; Visser & Ferrer, 2015). This is discussed in more detail in Chapter 4, which is concerned with the implications of migration off farms for low-income farm dwellers.

Chapter 3

Firm size and earnings

3.1 Introduction

There is an established literature documenting growing consolidation in the agricultural sector. Liebenberg and Pardey (2012) document a decrease in the number of agricultural enterprises and a simultaneous growth in the average area per farm[1]. The largest 100 farm enterprises in terms of income now contribute 26.9% of total farm incomes (Statistics South Africa, 2017). Does this consolidation mean that an increasing proportion of farmworkers are working in large firms? If so, what are the implications for farmworkers and agricultural policy? These are the main questions discussed in this chapter.

The subject of farm-size has drawn widespread commentary and debate. Various authors (see for example Cousins et al. (2018), Hall (2009) and Aliber, Mabhera, and Chikwanha (2017)) advocate broad agrarian reform in favour of smallholder agriculture as a mechanism for land reform as well as a driver of employment creation in South Africa. Cousins et al. (2018) for example suggest that only if 60% or more of commercial farmland is redistributed, mainly to market-oriented smallholders, can significant employment gains and improvements in livelihoods be realised. The National Development Plan aims for one third of the country's food to be produced by small-scale farmers by 2030, in part to stimulate employment creation (National Planning Commission, 2013). A recent report commissioned by the South African parliament to assess key legislation also emphasizes the importance of small business development with reference to agriculture (High Level Panel, 2017).

[1] See Annex A in the appendix.

The impact of growing consolidation in agriculture on farmworkers in South Africa has not been well studied. Recent work by Piek and von Fintel (2017) documents the differential impacts of minimum wages on small and large firms, finding that minimum wage increases may lead to increased inequality within the sector as a result of the inability of small firms to absorb increased labour costs while large firms can. Magruder (2012), in work not specifically focused on the agricultural sector, finds that centralised bargaining agreements that are often skewed towards the demands of large firms but extended to all firms, lead to a concentration of job losses in small firms. This may extend to the implications of minimum wage increases in agriculture. For example, the 2013 minimum wage increase arose as a result of a period of protest action centered in the relatively well resourced horticultural sector in the Western Cape, a relatively well resourced province. The agreement was extended to the entire industry.
Barrientos and Kritzinger (2004) study the impacts of the advent of global value chains on the export fruit sector and how this effects labour-demand responses. They find that producers are reducing their permanent labour force and increasingly relying on contract labour in order to maximise the flexibility of work and minimise labour costs. The authors argue that this has mixed implications for workers themselves: male contract workers often receive relatively high wages compared to female workers, but all contract workers do not receive formal security of employment or employment benefits and are thus more at risk to poverty (Barrientos & Kritzinger, 2004).

This chapter presents evidence of growing firm size in agriculture and discusses this in the context of current debates on agrarian policy. Using the Post apartheid labour market series (PALMS) data (Kerr et al., 2017), in which there are questions that relate to firm size, we document an increase in the proportion of farmworkers employed in firms with more than 50 workers. The majority of this increase appears to come as a result of a decline in the proportion of workers in medium sized enterprises (between 10-49 workers). Secondly, as a means of understanding potential implications of this trend, this chapter provides estimates of the firm-size earnings relationship for farmworkers. These results are discussed in the context of current debates on agrarian policy in South Africa.
The next section provides a brief overview of the firm-size earnings literature, thereafter the dataset is introduced. Section 3.3 presents the empirical results and section 3.4 concludes with a discussion.

3.2 Firm size and earnings

The existence of a firm size wage premium is a well documented result across various industries internationally (Margirier, 2007; Gerlach & Hübler, 1998; Mellow, 1982). On average, large firms pay higher wages. The reasons for this are more ambiguous and subject to debate. It is likely that the firm size wage premium is a result of various firm-related and labour related differences. On the one hand, workers in large firms are likely to be more able to specialise, resulting in better matching with their particular tasks. This would lead to higher productivity and higher wages (Belfield & Wei, 2004). Another reason may be that because monitoring costs are higher in large firms, they pay higher wages (efficiency wages) in order to disincentivize shirking (Velenchik, 1997; Oi & Idson, 1999). Alternate suggestions are that higher wages are used in order to compensate for harsher working conditions in large firms.

In the case of South African agriculture, various authors have attested to a growth in casualization of labour in large, export-oriented horticultural firms (Barrientos & Kritzinger, 2004; Rutherford & Addison, 2007; Du Toit & Ally, 2003). The payment of higher cash wages may be a way in which producers compensate employees for foregoing other employment benefits. This is likely to be true in the case of casual or seasonal labour. However, whether conditions in large firms are in fact worse for farmworkers than those in often struggling small firms is subject to debate. Another reason why a firm-size earnings relationship may be expected in the case of agriculture is the geographic isolation of many farms that results in low labour union membership rates. It is likely that unions find it easier to operate in large firms, where organising costs are lower, and that part of the firm-size earnings premium in large firms is due to the associated union wage premium that has been documented in South Africa (Hofmeyr & Lucas, 2001). Bhorat, Oosthuizen, Lilenstein, and Steenkamp (2017) in recent work on South Africa find a negative correlation between firm size and wages using tax data. In the case of agriculture, they find a U-shaped relationship, implying that larger firms generally display lower average wages than small firms, except for firms with over 1000 employees. The authors suggest this may be a result of low wages paid in the sector drawing down the average wages for larger firms, as well as the existence of small-scale, high value and capital intensive firms that may pay high wages (Bhorat et al., 2017). However, tax data do not allow for differentiation between different types of agricultural employees, given the absence of information on employee characteristics such as levels of education, skill, occupation and experience. This

is an important aspect of the South African agricultural sector where internal firm structures are highly stratified. For example, small farm enterprises might have one skilled agricultural worker (the farmer or foreman) receiving high wages, and a small number of semi or unskilled workers. This would result in higher average wages than those of larger firms which may still have one skilled agricultural worker but 20 unskilled workers. The advantage of labour survey data is the ability to determine the firm size wage premium conditional on employee characteristics.
In the international literature, the majority of studies focussing on farm size have focussed on the size of land holdings. In a compilation of worldwide agricultural censuses, Lowder, Skoet, and Raney (2016) find that small farms (under 2 hectares) account for 12% of the worlds agricultural land and that family farms account for 75%. In addition, Lowder et al. (2016) find that farm size (in hectares) had decreased in most low and lower middle income countries and increased in most high income countries over the period 1960-2000.

3.3 Introduction to the PALMS dataset

The Post apartheid labour market series (PALMS) is a stacked cross sectional collection of labour market surveys with nationally representative sampling frames (Kerr & Wittenberg, 2017). It is comprised of the 1993 Project for Statistics on Living Standards and Development, October household Surveys from 1994-1999, Labour force surveys from 2000-2007 and the Quarterly Labour force surveys from 2008-2017 (Kerr & Wittenberg, 2017). The series contains a harmonised set of variables that allows for an overview of long term labour market trends. The PALMS version 3.2 used here contains over 120 variables. In particular, the data can be used to identify occupation and industry of individuals, a range of individual-specific characteristics such as education, age, gender, population group and area of residence, as well as an indicator of firm size for employed respondents.
While the PALMS is an invaluable source of long term labour market data, there are some important aspects of the data that should be noted. Income data between 2010 and 2012 Q2 is imputed by Statistics South Africa for all individuals who refused to answer and reported a categorical income value. From 2012 Q3 onwards however, refusals and categorical responses are no longer imputed by Statistics South Africa (Kerr et al., 2017). In this analysis, the 'realearnings' variable created by Kerr et al. (2017) is used in conjunction with the recommended 'bracketweights' in all earnings related

analysis. Unfortunately, the coverage of living standards related questions, such as access to housing, sanitation, water, as well as access to social grants is not consistently covered throughout the entire series.

3.3.1 Identifying farmworkers in the PALMS dataset

Using the PALMS dataset, farmworkers are defined here as being of working age (being 15 years of age and above, while relaxing the condition that workers need to be below the age of 65)[2] and in elementary occupations according to occupation short codes. One-digit industry codes are used to identify workers in the broad category of "Agriculture, Hunting, Forestry and Fisheries", and 3 digit SIC industry codes are used to exclude forestry and fisheries workers[3]. In addition self-employed workers in agriculture and public employees are excluded[4]. Given the focus on low-income earners in agriculture, workers with personal monthly real earnings over R 15000 in December 2016 terms, or reporting zero earnings are also not considered farmworkers.

3.3.2 Firm size

Firm-level data is not often covered in national surveys. As such, the information in the PALMS is valuable as an indicator of firm size in the agricultural sector. While the October household surveys did not include questions relating to firm size, the labour force surveys (LFS) and quarterly labour force surveys (QLFS) both have nationally-representative sampling frams and included the following questions:
LFS: "How many regular workers has the organisation/ business/ enterprise/ branch where (the person) works, including him/ herself?"
Possible responses: "1","2-4", "5-9","10-19", "20-49", "50 or more" and "Don't know".
QLFS: "How many employees are there at your place of work?"
Possible responses: "0", "1","2-4", "5-9","10-19", "20-49", "50 or more"

[2]This follows Liebenberg and Kirsten (2013) and recognises that some workers continue working above the age of 65.

[3]SIC codes are recorded in the variables "industry" and "industry2". In the final analysis, only SIC codes between 110 (inclusive) and 120 are considered farmworkers. An overview of the codes can be found published by the Department of Trade and Industry (2018) and are avaialable here.

[4]Neyens and Wittenberg (2016) illustrate the change in the number of self-employed agricultural workers resulting from a change in the definition of work that came with the switch to the Labour Force Survey.

and "Don't know".

These questions are used to provide an indication of the size of agricultural firms over the period 2000-2017 in the absence of consistent firm-level data. While these questions are phrased differently, their substance and underlying intent is the same and the response categories are nearly identical. In order to simplify the analysis, the responses are grouped into three categories for small (< 10 workers), medium (10-49 workers) and large (>50 workers) firms.

3.4 Descriptive statistics: growing firm size and labour earnings

Table 3.1 presents the 5 year averages of proportions of farmworkers falling into the three firm size categories over the period 2000-2017. It illustrates that there has been a 9 percentage point increase (from 33% to 42%) in the proportion of farmworkers employed in large firms, over the period. The majority of this increase seems to have come from a decline in the proportion of workers in medium-sized firms. These statistics echo those attesting to increasing average farm size and a declining number of commercial farming units. Notably, these data show that two out of every five farmworkers work in a firm with over 50 employees.

Table 3.1: Proportion of farmworkers employed in small, medium and large firms (2000-2017)

	2000-2002 %/sd	2003-2005 %/sd	2006-2008 %/sd	2009-2011 %/sd	2012-2014 %/sd	2015-2017 %/sd
Under 10 workers	20	15	17	23	22	20
	(0.400)	(0.360)	(0.375)	(0.421)	(0.417)	(0.400)
10-49 workers	47	50	47	36	34	38
	(0.499)	(0.500)	(0.499)	(0.481)	(0.473)	(0.486)
Over 50 workers	33	34	36	41	44	42
	(0.470)	(0.475)	(0.481)	(0.491)	(0.496)	(0.493)
N	6112	6738	4577	6054	8864	2599

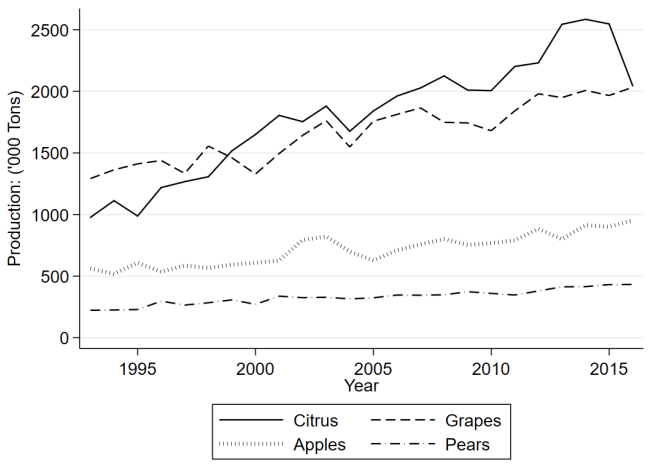
Source: Own calculations using PALMS (Kerr et al., 2017). *Notes:* Three year pooled averages are presented except for the last column which is comprised of only 2 years and two quarters.

It is likely that much of this growth in the proportion of large firms

has arisen as a result of intra-sectoral changes and in particular as a result of high levels of growth in labour-intensive and export-oriented farming in the horticultural sector, as demonstrated by Conradie, Piesse, and Thirtle (2009) for the Western Cape. The grape, citrus, apple and pear industries displayed very high rates of growth in production over the past 25 years as shown in Figure 3.1. The citrus industry for example employes roughly one worker per hectare, 80 000 workers in total and has grown considerably in the past two decades (Genis, 2018). Export oriented industries such as these are biased towards large firms because of the heightened importance of economies of scale given high input-costs, the necessity to be able to deliver in bulk and to produce a product of consistent quality for international consumers. The growth in these industries is also likely to be accompanied by a change in the nature of farm work that is no longer limited to work in the fields but includes processing and packing jobs that take place in many of these often vertically integrated firms.

Figure 3.2 provides an overview of mean real monthly earnings of farmwork-

Figure 3.1: Production in selected labour-intensive horticultural industries

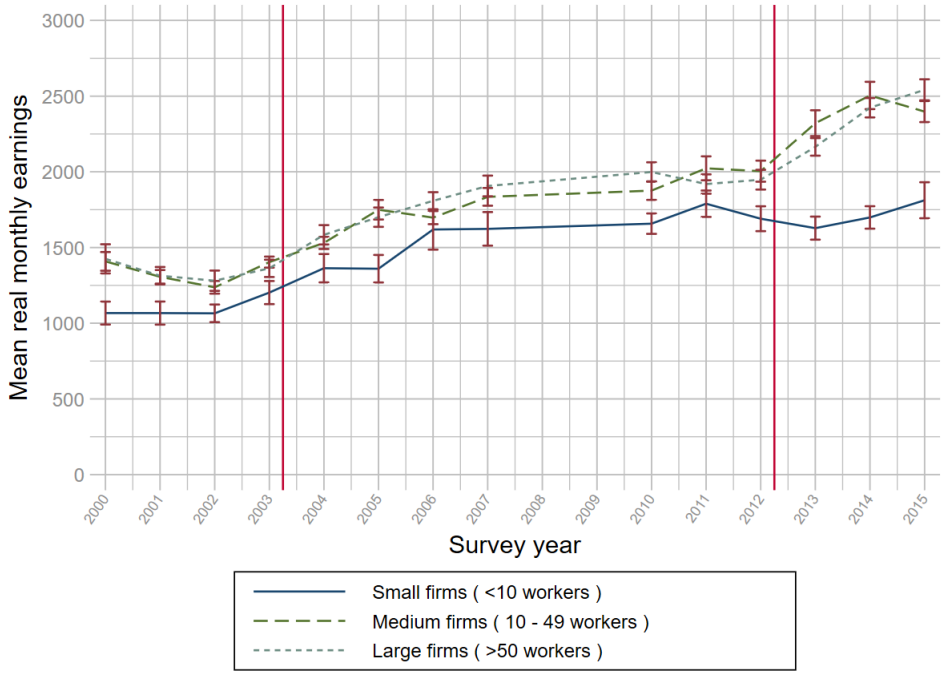


Source: Compiled with data from the Abstract of Agricultural Statistics (Statistics South Africa, 2018). *Notes:* Citrus includes oranges, naartjies, lemons, limes and grapefruit.

ers in small, medium and large firms in South Africa using the PALMS data. The figure shows both a general increase in real wages over the period as well as a growing disparity between the wages earned by farmworkers in small, medium and large firms. This disparity increases dramatically in the period

following the introduction of the 2012 minimum wage. In 2015, farmworkers in small firms report earnings that are on average R600 (in December 2016 terms) below average reported earnings of farmworkers in medium and large firms. Figure 3.3 illustrates that not only are average farmworker wages

Figure 3.2: Reported mean real earnings over time



Source: Own calculations using PALMS (Kerr et al., 2017). *Notes:* Figures in December 2016 Rands. 95% confidence interval bars shown. Weights are included to account for bracket responses. Vertical reference lines indicate the two minimum wage shocks. Wave averages are pooled to create yearly summary statistics.

higher in larger firms, but the increase in earnings of workers at the bottom end of the wage distribution was much more pronounced in larger firms compared to small firms[5]. In medium and large sized firms over the period 2000-2005, 30% of workers reported wages below R1000. Over the period 2010-2015, this proportion had decreased to around 7%. On the other hand,

[5]When this analysis is carried out on firms with under 5 workers, the result is even more pronounced.

for the period 2000-2005, 50% of workers in small firms reported wages below R1000 per month, while this decreased to 28% for the period 2010-2015.

Figure 3.3: Cumulative distribution functions

Source: Own calculations using PALMS (Kerr et al., 2017). *Notes:* This graph displays empirical cumulative distribution functions of real (Dec. 2016) earnings for small (<10 workers), medium (10-49) and large (>50) firms. Wave averages are pooled to create 5 year averages.

3.5 Firm-size earnings regressions

While large firms are often found to pay higher average wages, the reasons for this are not necessarily due to their size. Worker-characteristics are also important and labour force survey data allows for the control of individual characteristics that relate to labour market earnings and may differ systematically across agricultural firms of different sizes. Table 3.2 provides a description of the variables that are identified as being likely to influence earnings and that are included in the following analysis as controls.
Table 3.3 presents a decomposition of pooled summary statistics of farmworkers by firm size category for the period 2000-2015. The summary statistics show that indeed, workers in larger and smaller firms are very different. Farmworkers in larger firms on average have completed more years of education, are slightly younger, more likely to be female and more likely to be unionised. In addition, the majority of workers in medium and large firms report having a written employment contract, compared to only 34% of workers in small firms. They are also more likely to reside in urban areas while working as farmworkers.

Table 3.2: Descriptions of control variables

Variable	Description
Years of education	Derived number of years of completed education.
Age	In years
Female	=1 if gender is female
Union member	=1 if respondent indicates they belong to a trade union
Written contract	=1 if the respondent indicates they have a written employment contract
Years in current job	Interview year minus year in which job with current employer commenced.
Full time in last week	=1 if the respondent worked for more than 40 hours in the last week.
Population group: black	=1 if the population group of the respondent is black. 99% of farmworker as defined here are either black or coloured.
Urban residence	=1 if the respondent resides in an urban area (formal or informal).

Source: All variables derived from PALMS, (Kerr et al., 2017).

In table 3.4, pooled ordinary least squares (OLS) earnings regressions are presented, displaying the robustness of firm-size earnings disparities to observable individual characteristics of farmworkers. The following equation is estimated:

$$Y_{it} = \delta + \beta X_i + \epsilon \tag{3.1}$$

Where Y_{it} is log real earnings of individual i in wave t and δ is a constant term. X_{it} is a vector of individual specific control variables and province and wave fixed effects as well as firm size indicators. ϵ is an error term. Categorical firm-size variables are included with small firms as the base case. These

Table 3.3: Summary Statistics: Explanatory variables by firm size

	2000-2002			2013-2015		
	Small	Medium	Large	Small	Medium	Large
Years of education	4.118	4.941	5.501	5.762	7.230	7.144
	(3.579)	(3.489)	(3.638)	(3.797)	(3.412)	(3.647)
Age	37.811	34.718	34.045	38.904	35.837	35.048
	(12.828)	(11.652)	(11.053)	(12.553)	(11.258)	(10.550)
Age squared	1594.083	1341.056	1281.190	1671.056	1411.005	1339.672
	(1063.010)	(917.454)	(847.187)	(1041.075)	(880.097)	(809.391)
Female	0.370	0.443	0.556	0.110	0.373	0.468
	(0.483)	(0.497)	(0.497)	(0.313)	(0.484)	(0.499)
Union member	0.023	0.063	0.084	0.006	0.025	0.080
	(0.150)	(0.242)	(0.278)	(0.077)	(0.156)	(0.271)
Written contract	0.222	0.314	0.358	0.314	0.675	0.786
	(0.416)	(0.464)	(0.480)	(0.464)	(0.468)	(0.410)
Years in current job	5.477	6.347	5.343	5.391	5.732	4.599
	(7.623)	(8.155)	(7.885)	(7.503)	(7.583)	(6.388)
Full time in last week	0.834	0.939	0.942	0.867	0.908	0.934
	(0.372)	(0.238)	(0.234)	(0.339)	(0.290)	(0.249)
Population group: black	0.733	0.550	0.740	0.835	0.613	0.777
	(0.442)	(0.498)	(0.439)	(0.371)	(0.487)	(0.416)
Urban residence	0.081	0.146	0.175	0.173	0.271	0.265
	(0.272)	(0.353)	(0.380)	(0.378)	(0.445)	(0.442)
N	1165	3094	1852	2115	2971	3436

Source: Own calculations using PALMS (Kerr et al., 2017). *Notes:* Sample means are presented with standard deviations in brackets. "Small", "medium" and "large" firm size categories indicate workers in firms with under 10, between 10 and 49, and over 50 workers respectively. Summary statistics for pooled LFS and QLFS data for the periods 2000-2002 and 2013-2015 are presented.

results suggest, across a range of specifications that there exists a strong correlation between firm size and farmworker earnings. The preferred specification (column 4), controlling for observable individual characteristics, province and wave fixed effects, suggests that wages in large firms with over 50 workers are up to 22% higher on average than those in firms with under ten employees, while those in medium sized firms are 17% higher.

Table 3.5 shows how firm-size earnings premiums change under different assumptions regarding the level of in-kind payments that may be higher in small firms. Employers are legally allowed to pay 20% of legislated wages in kind (10% in food and 10% in accommodation) and it is possible that in kind payments are higher in small firms than large firms. The results in table 3.5 show that under the assumption that in-kind payments in small firms represent 10% of reported earnings in small firms and 0% in medium and large firms, there would still exist a 12% earnings premium for large firms over small firms. In the case where this is raised to 20% the earnings premium is only 3% for large firms.

Table 3.4: Pooled firm-size earnings regressions 2000-2015

Dep.variable: log real earnings	(1)	(2)	(3)	(4)
Base:Small firms (<10 workers)	-	-	-	-
Medium firms (10-49 workers)	0.228***	0.143***	0.131***	0.174***
	(0.01)	(0.01)	(0.01)	(0.01)
Large firms (>50 workers)	0.323***	0.194***	0.194***	0.216***
	(0.01)	(0.01)	(0.01)	(0.01)
Years of education	0.0359***	0.0314***	0.0311***	0.0207***
	(0.00)	(0.00)	(0.00)	(0.00)
Age	0.0296***	0.0188***	0.0187***	0.0160***
	(0.00)	(0.00)	(0.00)	(0.00)
Age squared	-0.000297***	-0.000205***	-0.000202***	-0.000197***
	(0.00)	(0.00)	(0.00)	(0.00)
Female	-0.204***	-0.166***	-0.159***	-0.127***
	(0.01)	(0.01)	(0.01)	(0.01)
Black	-0.285***	-0.215***	-0.121***	-0.109***
	(0.01)	(0.01)	(0.02)	(0.02)
Union member		0.0670**	0.0765***	0.140***
		(0.03)	(0.03)	(0.03)
Written contract		0.268***	0.262***	0.175***
		(0.01)	(0.01)	(0.01)
Years in current job		0.00801***	0.00724***	0.00857***
		(0.00)	(0.00)	(0.00)
Full time		0.224***	0.211***	0.228***
		(0.02)	(0.02)	(0.02)
Urban		0.138***	0.0987***	0.0487***
		(0.01)	(0.01)	(0.01)
Constant	6.582***	6.465***	6.524***	6.352***
	(0.04)	(0.05)	(0.05)	(0.06)
Province fixed effects	No	No	Yes	Yes
Wave fixed effects	No	No	No	Yes
Observations	34559	23545	23545	23545
R^2	0.163	0.234	0.247	0.330

Notes: * p<0.10, ** p<0.05, *** p<0.010. Robust standard errors in parentheses.
Source: Own calculations using PALMS (Kerr et al., 2017).

Table 3.5: Firm-size earnings regressions: accounting for possible size-dependent variation in in-kind payments.

	Log real earnings	Log real earnings (+10% for small firms)	Log real earnings (+20% for small firms)
Base: Small firms	-	-	-
Medium firms	0.174***	0.0785***	-0.00847
	(0.01)	(0.01)	(0.01)
Large firms	0.216***	0.120***	0.0334**
	(0.01)	(0.01)	(0.01)
Full controls	YES	YES	YES
Province fixed effects	YES	YES	YES
Wave fixed effects	YES	YES	YES
Observations	23545	23545	23545
R^2	0.330	0.315	0.306

Source: Own calculations using (Kerr et al., 2017). *Notes:* The three columns present firm-size earnings regression coefficients for farmworkers under three hypothetical scenarios. The first assumes in-kind payments are evenly distributed across firm size (as in column 4 of Table 3.4). The second and third columns assume in-kind payments result in actual incomes that are 10% and 20% percent higher than reported earnings in small firms. * p<0.10, ** p<0.05, *** p<0.010. Robust standard errors in parentheses

3.6 Discussion

There is a large South African economic literature on the impacts of labour market policies on employment, wages and the income distribution. In the agricultural sector, recent empirical analyses using labour survey data have largely focused on the impacts of minimum wages and have either focussed on the sector as a whole (see Bhorat et al. (2014)) or examined localised effects in particular sub-sectors (see Conradie et al. (2018)). However, little empirical work has been conducted focussing on firm size changes and the relationship between firm size and farmworker earnings in the post-apartheid period. Heightened current debate on the nature of South Africa's agrarian future, as a result of growing political debate on land reform, make an understanding of the firm-size wage premium in agriculture important given the ability of the sector to absorb unskilled labour.

Current government policy and practice is ambiguous when it comes to the type of agrarian future envisioned by South Africa. On the one hand, a model based on smallholder farmers is regularly raised in policy documents and has found support in public debate. On the other hand, a policy of economic liberalisation, labour legislation and near complete lack of support for small-scale farmers creates an economic environment in which it is difficult for small-scale farmers to compete in a retail sector dominated by large supermarket chains that are inserted in global value chains.

The evidence presented here suggests that there is a growing proportion of farmworkers employed in large agricultural firms over the past 15 years. These workers are more likely to belong to labour unions and more likely to reside in urban areas than workers on small-scale farms. They are also more likely to attest to having written employment contracts. Secondly, this chapter presented evidence suggesting that there exists a significant firm-size wage premium for farmworkers working on large farms. On average, workers in firms with over 50 employees report earnings that are 22% higher than those in firms with under ten workers, controlling for a range of variables. This premium remains sizeable if we assume that in-kind payments represent 10% of reported earnings in small firms and 0% in large firms.

There is a large body of international literature attesting to the firm-size earnings premium. This relationship has been found to persist despite controlling for various observable individual characteristics and the results presented here support those found by (Piek & von Fintel, 2017), that large firms are likely to find it easier to comply with labour legislation and to compete internationally as a result of economies of scale.

If indeed these results represent the situation in the industry, then there ex-

ists a paradox between the needs for a) poverty alleviation and job creation b) labour legislation that provides fair working conditions, and c) policy goals that envision an agrarian future characterised by smallholder agriculture. While small firms may have the potential to spur small-business development, the evidence presented here suggests that large firms are able to pay higher wages and are more likely to comply with labour legislation. Through their insertion into global value chains and their ability to create upstream and downstream linkages[6], large firms are likely to be able to provide more diversified types of employment. Through social-standards requirements, especially from European retailers, an insertion into global value chains can also present the opportunity for social upgrading that may be more difficult to enforce for smaller firms (Barrientos & Visser, 2013)[7]. Farmworkers in large firms are also more likely to belong to labour unions that can represent their interests collectively and are more likely to reside in urban areas, where they have access to off-farm opportunities. Beinart and Delius (2018) argue that while there is significant scope for supporting existing smallholder farmers in areas that exist under communal land tenure, a broad agrarian transformation towards small-scale agriculture is unlikely to yield desired results.

On the other hand, there are clear disadvantages to increasing levels of concentration and consolidation in the industry. Growing inequality within the sector is one of these. It may result in it becoming more difficult for small firms to remain profitable as large firms gain market shares.

This particular analysis is however limited by an inability to link more detailed firm and individual level data. There are likely to be important intra-sectoral differences in firm size linked to the types of agricultural products being produced that can not be accounted for here. Secondly, it is also possible that larger firms pay higher wages in order to compensate for higher levels of job-insecurity and short-term employment. These are questions that require further investigation using linked employer-employee data.

[6] For example, the firm ZZ2 is involved in development, growing, transporting, processing and marketing of their agricultural products (Holm, Van Zyl, & Koorts, 2016; Grobler, 2014).

[7] Barrientos and Visser (2013) do caution that emerging market retailers do not have these same fair labour practice standards.

Chapter 4

Welfare effects of migration off farms

4.1 Introduction

Labour force survey data presented in the previous chapter shows that a growing proportion of farmworkers are residing in urban areas. This trend is even more pronounced for workers in larger firms[1]. There is also a large literature documenting rising urbanization in South Africa (Turok & Borel-Saladin, 2014). This chapter broadens the scope to low-income farm dwellers in general and considers the living standards changes that result from migration specifically off commercial farms and into urban areas. In particular, it attempts to provide a preliminary answer to the question: What happens to the living standards of low-income farm dwellers when they migrate to urban areas?

While urbanization is a process observed throughout the world as countries develop, there are some features particular to the South African case. The artificially low levels of urbanization enforced by laws restricting the movement of black South Africans under apartheid[2] meant that the years leading up to and following democracy and the freedom of movement that came with this lead to an exodus of people out of rural areas into towns and metropoles in search of employment and opportunity.

The enabling nature of an expanded and de-racialised government social

[1] See Table 3.3.

[2] Internal passports introduced to restrict the movement of black africans were actually instituted as early as 1797 in the Cape Colony, successively strengthened throughout the early and mid-20th century with the Pass Laws and only repealed in 1986.

grants system also facilitated the ability of rural South Africans, and in particular rural women, to incur the significant costs associated with moving to urban areas to look for employment (Posel, Fairburn, & Lund, 2006; Banerjee, Galiani, Levinsohn, McLaren, & Woolard, 2008; Ardington, Case, & Hosegood, 2009).

A third driver of migration, specific to commercial farms, is the result of labour shedding and farm dweller evictions. The post-apartheid period brought with it progressive labour and land tenure reform as well as a mechanism for land-restitution and a policy goal of rural land reform. Coupled with a changing economic and political landscape, this was associated with a wave of forced migration in the form of farm-evictions (Wegerif, Russel, & Grundling, 2005). Farm-evictions are still subject to extensive public debate[3]. However, data allowing for credible estimates of the extent of both legal[4] and illegal evictions are hard to come by[5] (Visser & Ferrer, 2015). In one of few studies of national scope, Wegerif et al. (2005) estimate that for the period 1984-2004, 1.7 million people had been involuntarily evicted from farms and 3.7 million people were displaced off farms altogether[6]. The large scale migration off farms and into urban areas are likely to have taken place for a variety of these voluntary and involuntary reasons.

The development literature and has long recognised the links between urbanization, productivity and long term economic growth (De Brauw, Mueller, & Lee, 2014; Collier & Venables, 2016). In South Africa however, high rates of rural-urban migration, of which migration off farms is a sub-category, has presented a challenge for undercapacitated municipalities that have struggled under increasing demand for housing and service delivery (Visser & Ferrer, 2015; Atkinson, 2007). Along with incoherent national and local government policy, this has led to a proliferation of under-serviced informal settlements, often on the urban-periphery (Pillay, Tomlinson, & Du Toit, 2006). Turok and Borel-Saladin (2014) find that there are more people liv-

[3]For example, see Daily Maverick, 13 August 2018 ; Daily Maverick, 10 July 2018; Daily Maverick 14 August, 2018.

[4]One criticism of the Extention of Security of Tenure Act (1997) is that the Act creates a legal channel through which well-resourced land-owners can pursue evictions, while a lack of institutional support and the complexity of the legislation inhibits under-resourced farm dwellers from challenging this.

[5]In their research,Visser and Ferrer (2015) found that "Municipalities, the courts, Department of Rural Development and Land Reform do not keep consistent, reliable information on evictions, and if they do, such information was not made available to the researchers despite numerous requests."

[6]Wegerif et al. (2005) defines displaced farm dwellers as "a person who lived on a farm and left the farm either through being evicted or out of his or her own choice."(p.42)

ing in shacks in urban areas of South Africa now than ever before. The persisting spatial inequality of South African towns and cities are another challenge that low-income migrants, who often end up far from jobs opportunities, need to face (Turok, 2014). Kerr (2017) for example, finds that the poorest 20% of residents in South African metros spend an average of 40% of their gross earnings on transport.

Farms can also be seen paradoxically, both as settings of security and settings of deprivation (Atkinson, 2007). Low income workers on farms are faced with stark racial and class inequalities, low wages and limited opportunities for professional growth. Bhorat, Kanbur, and Stanwix (2015) find that around half of all farmworkers reported wages below the statutory minimum in 2007, with sub-minimum wages being on average 16-20% lower than the legislated wage. In addition, alternative employment opportunities (other than farm work) are limited, given the geographic isolation of many farms. Relations of racialised paternalism between farm owners and farm dwellers are well-recognised in the sociological literature and result in labour relations that are skewed towards employers (Du Toit, 1993; Ewert & Du Toit, 2005).

However, residence on farms has also historically come with a closeness between employer and employees of a nature that is unlikely in urban settings. Atkinson (2007) argues that the social capital that comes in parcel with these relations also have material benefits, including transport provision, housing provision, financial help and medical assistance. While conditions for low-income farm dwellers are dire, it is not immediately apparent that they are worse than those in informal settings on the urban periphery.

These contradictions between the theoretical benefits of urbanization and the structure of South African cities raise the question of what the implications are for living standards of farm dwellers who migrate off farms and into urban settings, which is the subject of this chapter. This is linked to the associated question of what the role of government policy should be in encouraging or discouraging urbanization of farmworkers and low income farm dwellers, given the pitfalls of current policies[7] (Visser & Ferrer, 2015).

The National Income Dynamics Study (NIDS), is a five wave, nationally representative panel dataset. It allows for the identification of low-income farm dwellers who can be tracked throughout the period of the panel. Here,

[7]The Farm Worker Housing Assistance Programme (FWHAP) for example is skewed towards permanent workers and aimed at on-farm housing, neglecting the fact that increasing numbers of workers reside in urban areas.

a difference in differences approach similar to that of Beegle, De Weerdt, and Dercon (2011) in the context of Tanzania, is employed in order to understand how living standards change for low-income migrants off commercial farms. The next section provides an overview of the theoretical and local literature on the effects of rural-urban migration. Thereafter the NIDS dataset and sample is introduced. Section 4.3 presents the empirical strategy and results are presented in section 4.4. The final section concludes.

4.2 Rural-urban migration in South Africa

Rural-urban migration has long been a feature of the South African economy. The migrant-labour system constituted the backbone of the country's mining-led industrialisation path (Wilson, 2001). Historically, competition for cheap labour between mining and commercial agriculture existed, but a majority of mine-labour was recruited from the former homelands and not directly from commercial farming areas, a result of what has been termed the "maize and gold alliance" (Greyling, Vink, & van der Merwe, 2018; Trapido, 1971). This history of oscillating migrant-labour originating in rural areas in the former homelands has resulted in the creation of important linkages that have not developed to the same extent between commercial farms and urban areas. Rural-urban migration increased rapidly following the repeal of the pass laws in 1986, in the time leading up to democracy, and has continued in the period since.

While there is a rich literature on migration in South Africa, extensive data on internal migration in South Africa has been limited in the post-apartheid period as the coverage of migration in labour surveys has declined (Posel, 2004). In particular, questions of the effects of migration on living standards have not benefited from tracking surveys where pre and post migration outcomes can be observed. The National Income Dynamics Study (NIDS) is one such project, following respondents over a period of 9 years (2008-2017). Recent work by Visagie and Turok (2017), examines the welfare impacts of rural-urban migration in South Africa using descriptive data from four waves of NIDS, grouping together farms and traditional areas under tribal authority. The authors find that migrants were initially more likely to be unemployed than non-migrants and that migration to urban areas substantially increased their chances of finding employment and escaping poverty. Daniels, Partridge, Kekana, and Musundwa (2013) find that rural-urban migrants have a higher chance of finding employment than rural stayers. Garlick et al. (2016) use the first three waves of the NIDS data to estimate

causal impacts of rural-urban migration and find that migration is associated with large gains in income for the individuals who migrate. Mulcahy and Kollamparambil (2016) find, also using NIDS and grouping together traditional and farm areas, that migration to urban areas leads to an 8.3% decline in subjective well-being, proposing that this is due to unrealistic expectations and changing relative societal standing. Using panel data from the KwaZulu-Natal Income Dynamics Study (KIDS), Rogan, Lebani, and Nzimande (2009) find significant positive correlations between migration and various measures of household well-being in the province, also highlighting the importance of remittances originating from migrants, to rural households.

Migration specifically off commerical farms and into urban settings has received less attention. Most existing studies on rural-urban migration in South Africa have grouped farming areas with traditional areas. However, the dualism in rural South African means that rural areas are not homogeneous and substantial differences exist between traditional areas and commercial farms that warrant separate approaches. For example, employment prospects on commercial farms are much higher than those in traditional areas, households are smaller and agricultural employment is much higher (Daniels et al., 2013). Land ownership is another important difference between traditional and farming areas as farm dwellers are generally residents on land owned by farmers. In traditional areas, tenure rights are based on custom. In addition, Posel (2004) has highlighted that migration originating in traditional areas are often of an oscillating nature, with migrants maintaining strong links with the areas from which they originate. Given the differing land-ownership structures, it is not clear that farm dwellers who migrate off farms have the same connection with the farm they originate from. In one case study of an off-farm housing project for farmworkers in Bothaville, Hartwig and Marais (2005) find mixed results associated with migration. On the one hand off-farm housing improved access to healthcare and education and comes with the benefit of direct ownership. On the other, in this particular case, the quality of off-farm housing was found to be worse than that on farms and services that had been provided for free before, now had to be paid for. Another notable aspect is that farm-workers living in urban areas could no longer maintain livestock and transport costs to work increased (Hartwig & Marais, 2005).

This study is different from previous work in three key respects. Firstly, the focus is specifically on low income farm dwellers moving from commercial farms to towns and cities. We study the impact of migration off commercial

farms and into urban settings on seven indicators of living standards and socio economic status, including incomes, housing, an asset index, access to piped water, flush toilets and electricity, as well as a subjective measure of life satisfaction. Secondly, a difference in differences specification allows us to control for endogeneity arising as a result of unobserved fixed individual heterogeneity that may influence both migration and welfare outcomes. Thirdly, this study benefits from an additional wave of the panel implying that the impacts of migration can be traced over a period of ten years.

4.2.1 Models of migration

The standard Harris-Todaro model of migration posits that voluntary migration will occur until the expected returns to labor in rural areas are equivalent to the expected returns to labor in urban areas, accounting for the probability of employment (Harris & Todaro, 1970). In South Africa, wages in urban areas are much higher than those on farms, even though unemployment rates on farms are lower than in urban areas. The low wages paid in the agricultural sector and low levels of unionization in agriculture are likely drivers. The highly stratified nature of the firm structure in many commercial farming enterprises in South Africa also means that low-income workers are likely to face a wage ceiling. As such, prospects for substantial earnings growth through promotions are likely to be low, especially in small family farm settings. The New Economics of Labour Migration highlighted the role of migrant networks and other non-labor market factors in driving migration (Stark & Bloom, 1985). Lack of or cessation of employment is likely to be an important driver of voluntary movements. Evictions are likely to be another driver. There are likely to be an array of push and pull factors driving migration off farms.

4.3 Data: the National Income Dynamics Study (NIDS) panel

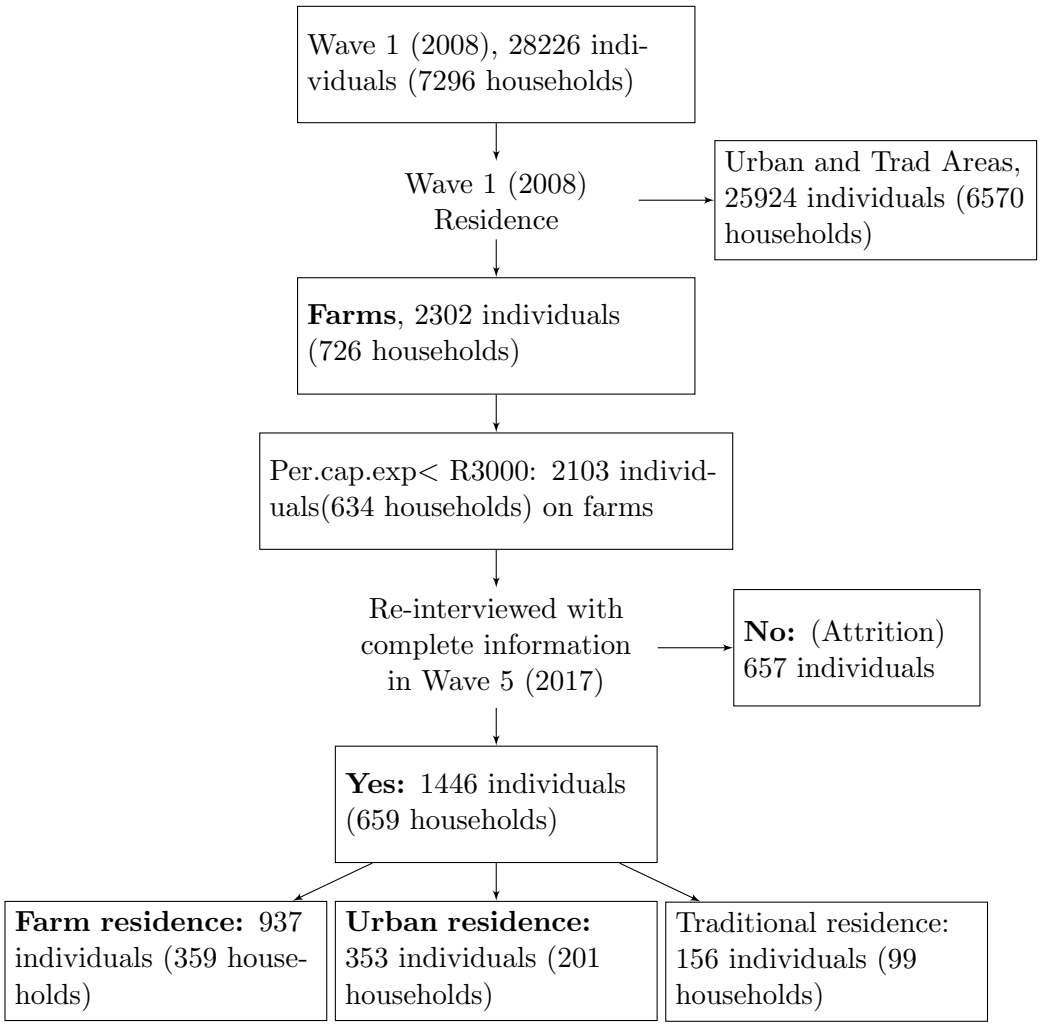
The NIDS panel contains a range of socio-economic and demographic information on a nationally representative sample of individuals who are tracked and interviewed roughly every two years, starting in 2008. Currently, five waves of the survey exist, allowing analysis to control for individual fixed heterogeneity and monitor time-variant trends. Here, we limit the panel to

individuals consistently, successfully interviewed in all waves of the survey from 2008 to 2017.
In wave 1, roughly 7% (2302 individuals in 726 households) of these balanced panel members resided on farms. Of these the population of interest for this study is low-income farm dwellers. In 2008, 2103 individuals on farms had per-capita incomes of lower than R3000[8] (in March 2017 prices). This group of low-income farm dwellers is the baseline population for this study. In wave 5, 1446 (69%) of these households were re-contacted. Around 17% (353 individuals) had relocated to urban areas, 156 to traditional areas and 937 remained on commercial farms. In this analysis of the living standards implications of moving off farms, we compare the changes in living standards of migrants to those of non-migrants conditional on baseline characteristics. Of the 657 individuals in the baseline group of low-income households in 2008 not successfully re-interviewed in wave 5 due to attrition, 35% had died, 28% were not tracked successfully and the remaining 37% (240 individuals) were either non-responsive or refused to take part. Figure 4.1 provides an overview of the evolution of the sample.

What figure 4.1 does not indicate is that between wave one and wave five, individuals were contacted in waves 2,3 and 4. In designating individuals as migrants, only mono-directional migration is considered. Thus if a household migrated from a farm to an urban area and then returned to a farm, they are not considered a permanent migrant. One limitation is that there is no way of knowing if migrants returned between waves. Another limitation is that it is not possible to determine directly *why* people migrated. Given that individuals are re-contacted in waves 2, 3 and 4, we can determine roughly when individuals migrated. This allows us to compare outcomes of individuals who migrated early in the panel to those who had migrated later in the panel.

[8]This cut-off is chosen based on the the assumption that a household of 4 persons with two working adults in elementary jobs in farm work (where median wages are roughly R2500) would receive a monthly combined income of R5000 and per-capita incomes of R1250. As such the cut-off is unlikely to exclude farm-worker families.

Figure 4.1: Overview of sample evolution - NIDS waves 1-5 (2008-2017)



4.4 Empirical approach: the impact of migration off farms on living standards

Following the methodology of Beegle et al. (2011) and Cockx, Colen, and De Weerdt (2018), the panel nature of the NIDS data allows for the adoption of a difference in differences approach. This allows us to control for unobserved individual fixed heterogeneity, for example risk aversion, that

may influence both living standards and migration. This is extended by i) including various individual and household level controls that may influence living standards and ii) the use of propensity score matching[9] to match migrants to observationally similar non-migrants. Secondly, because we observe households in which some individuals migrate and others do not, we can include initial household fixed effects (IHFE) to compare the outcomes between migrants and non-migrants within the same baseline households. This controls for features specific to the household, such as family values. Lastly, because the NIDS panel spans five waves, some individuals migrate early in the panel and others migrate later. We argue that the period in which the migrant moves is not related to living standards outcomes, other than through the impacts of migration. In effect, this means that the main selection effect is that of selection into migration, as opposed to the time of migration. Thus we can compare the outcomes of early and late migrants.
Living standards are measured in various ways. In addition to log per capita expenditure, a wealth/asset index is included to provide an alternative measure of socio-economic status[10]. The variables that are included in the asset index are ownership of a fridge, electric or gas stove, television, a radio and a cellphone. Other living standards outcomes that are measured are indicators of the quality of housing, access to piped water on site, a flush toilet and a subjective measure of life satisfaction.
In order to analyse the living standards implications of migration of low-income residents off commercial farms and into urban settings, the baseline population of interest is low-income (per-capita total incomes below R 3000 per month in March 2017 terms) individuals residing on commercial farms in 2008. An important departure from the previous chapter is that here, the baseline group is not limited to farm-workers, but broadened to farm dwellers. A narrow focus on initially employed individuals in light of high unemployment in South Africa as well as the reality that a large number of residents on farms are not necessarily employed there would limit the scope of the analysis. A subset of this group of low-income farm dwellers would have migrated to urban areas by the fifth wave. We restrict the analysis to mono-directional migrations and do not include individuals who oscillated between urban and farm areas at different stages of the panel in our definition of a migrant. This type of circular migration is common in South Africa and has been documented by Posel (2004). However, it is not the focus of

[9] This is done using the Stata command DIFF (Villa, 2009) and matching on the control variables.

[10] An overview of the construction of the asset index is provided in Annex B.

this paper which is concerned with permanent settlement patterns. In particular we are interested in the effects of permanent migration off farms and into into urban areas on various measures of welfare. A linear specification of this is as follows:

$$Y_{i,w} = \alpha + \beta M_i + \gamma post_t + \delta(M_i * post_t) + \theta X_{i,w} + \epsilon_{i,t} \tag{4.1}$$

Where $Y_{i,w}$ is the particular welfare outcome of individual i in wave w, δ is the coefficient of interest, α is a constant term and M_i is an indicator variable taking on the value of 1 if individual i is a migrant and 0 if not. The variable *post* is a term accounting for the time-trend of the outcome variable, X is a vector of individual and household level controls and ϵ is an independent and identically distributed error term. A difference in differences estimator estimates the coefficient δ as the pre-and-post differences of migrants, minus the pre-and-post differences of non-migrants:

$$\hat{\delta}_{DD} = (\overline{Y}_1^{M=1} - \overline{Y}_0^{M=1}) - (\overline{Y}_1^{M=0} - \overline{Y}_0^{M=0}) \tag{4.2}$$

Where $\overline{Y}_{1,0}$ is the sample mean of the outcome variable in the particular wave (1 = wave five, 0 = wave one). Under the condition that the parallel trends condition is met (i.e. that migrant status is independent of welfare outcomes other than through the effect of migration), $\hat{\delta}_{DD}$ yields the average treatment effect on the treated.

In the above model, only two periods and two groups are considered (pre-and-post i.e. wave 1 and wave 5; migrants and non-migrants). In an extension of this, we compare the outcomes of early and later migrants and see whether coefficients vary systematically. Given that there are five waves in which participants are observed in the NIDS panel, mono-directional migration could have occurred in four time periods. Indicating migration at each time period as $t = 1, 2, 3, 4$, where $t = 1$ indicates migration between wave one and two, the pre-and-post outcomes of early and later migrants can be compared. In this sense, we exploit variation across groups that are 'treated' (i.e. migrate) at different times. The canonical difference in differences estimator, outlined in equation 4.1 is the weighted average of these migrations at different time periods between wave 1 and wave 5 (Goodman-Bacon, 2018). This extension can be expressed as:

$$Y_{i,w} = \alpha + \sum_t \beta_t M_{t,i} + \gamma post_t + \sum_t \delta_t (M_{t,i} * post_w) + \theta X_{i,w} + \epsilon_{w,i} \quad t = (1, 2, 3, 4) \tag{4.3}$$

In the above equation, the different δ_t coefficients are estimated as:

$$\hat{\delta}_{t=(1,2,3,4)} = (\overline{Y}_1^{M_t=1} - \overline{Y}_0^{M_t=1}) - (\overline{Y}_1^{M=0} - \overline{Y}_0^{M=0}) \tag{4.4}$$

The pre and post outcomes of migrants in a particular time period are compared to those of non-migrants. Here, the argument is that while migration may not take place at random in the population, the time of migration does and there is no systematic reason related to living standards that differentiate migrants in $t = 1$ from those in $t = 4$. If there are systematic differences between urban areas and farms, we would expect these to become more evident over time, i.e. that $\delta_1 > \delta_4$.

Table 4.1 provides an overview and description of the definitions of the outcome and control variables that are used in the analysis. In addition to the 7 outcome variables that relate to living standards, we include individual and household level controls that are likely to influence both migration as well as living standards outcomes.

Table 4.1: Descriptions of outcome and control variables

Variable	Description
Log per capita expenditure	Logarithm of (total real household expenditure divided by household size)
Asset index score	Index of ownership of a fridge, electric/gas stove, radio, television and cellphone.
Poor (UBL)	=1 if real (March 2017 terms) per-capita expenditure is below R1136, 0 otherwise.
Brick dwelling	=1 if dwelling is a brick structure, town/cluster house, flat or apartment. 0 otherwise.
Tap water on site	=1 if the household has tapped water in the house or in the yard. 0 otherwise.
Flush toilet	=1 if the household has access to a flush toilet on site or off site. 0 otherwise.
Electricity access	=1 if the household has electricity, 0 otherewise.
Life satisfaction	Self reported level of life satisfaction, from 1 (least) to 10 (most).
Years of education	Highest level of completed education in years.
Age	In years
Age squared	Age*age
Female	=1 if the respondent is a woman
Female headed household	=1 if the household head is a woman
HHsize	Number of of people who usually reside at the house for at least four nights a week.
Unemployed	=1 if the respondent is unemployed by the strict definition, 0 otherwise.
HH head unemployed	=1 if the household head is unemployed by the strict definition, 0 otherwise.
HH pension recipient	=1 if at least one person in the household receives a state old-age pension, 0 otherwise.
Head union member	=1 if the household head is a labour union member, 0 otherwise.
HH child grant recipient	=1 if at least one person in the household receives a state child support grant, 0 otherwise.
African	=1 if the respondent is African.
Coloured	=1 if the respondent is Coloured.
Asian/Indian	=1 if the respondent is Asian or Indian.
White	=1 if the respondent is White.

Source: All variables derived from NIDS (2018). *Notes:* See Annex B in the appendix for a description of the construction of the asset index.

4.5 Results

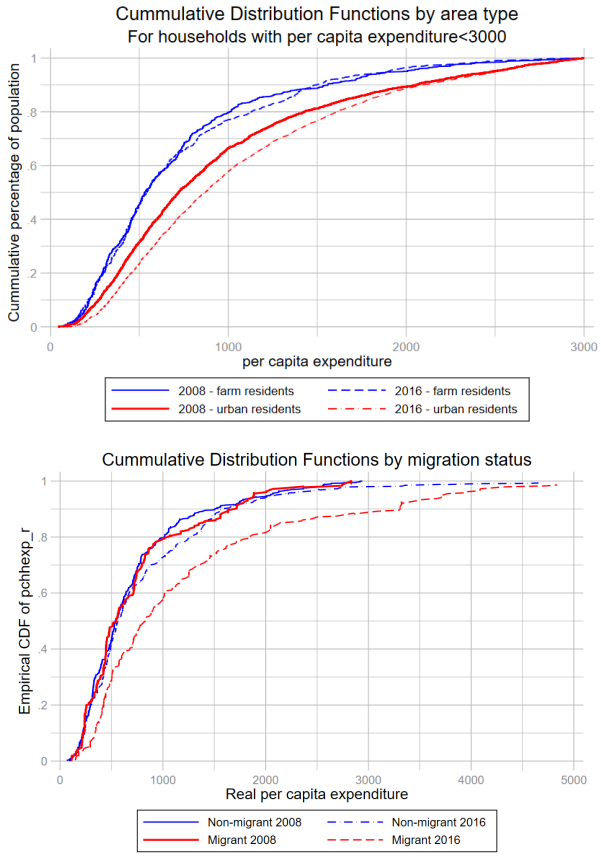
4.5.1 Descriptive results

The NIDS data suggests that while evictions have been documented to be an important driver of migration off farms, it is also likely that several pull factors of urban areas exist for low income residents on farms. Average per capita expenditures in absolute value are higher and across the distribution, expenditure growth over the period of the panel is higher too. The two panels of figure 4.2 show the differences in the income distributions of individuals with a per-capita expenditures lower than R3000 on farm and urban households, as well as that between migrants and non-migrants over the period of the panel. Three things stand out in Figure 4.2. Firstly, when looking at the first panel we see that in 2008, the discrepancy in incomes between low-income farm and urban households was large. 65% of urban households had per-capita expenditures below R1000, while 85% of farm households had per-capita expenditures below R1000. Secondly, expenditure growth in urban areas over the period 2008-2017 was much greater in urban areas and happened across the distribution, while on farms marginal, if any income growth happened for relatively well-off households. This also justifies the focus of this study on low income households, defined as households with per-capita expenditures lower than R3000. Of the baseline sample of farm-households with per capita expenditures under R3000, 95% had per capita expenditure under R2000. Thirdly, the second panel in figure 4.2 shows the significant growth in per capita expenditure of farm to urban migrants, coming from a similar pre-migration distribution.

Figure 4.3 shows the disparity in average per-capita expenditure growth for low-income households between farm and urban areas, alluding to strong pull-factors of urban areas. Mean per-capita expenditure for low income households on farms grew by 26% from 2008 to 2017. For low-income urban residents, per-capita expenditure increased by 83%. This disparity is significant in light of the 51.2% increase in the sectoral determintion for Agricultural work that was introduced in March 2013. These figures are independent of occupation type, but point to the economic benefits associated with density in urban areas (Collier & Venables, 2016).

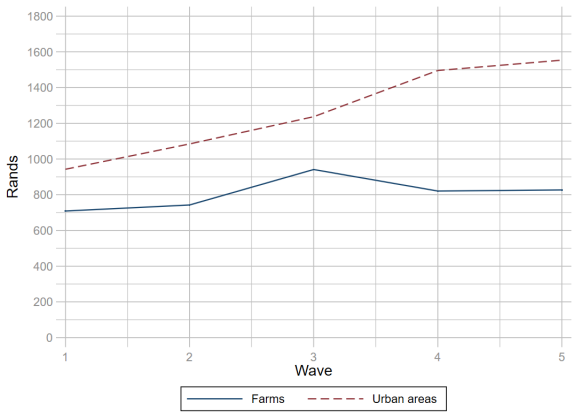
Figure 4.4 shows the compound average incidence of expenditure growth across the expenditure distribution for farm and urban residents throughout the panel. It shows that expenditure growth was higher for each decile of the expenditure distribution in urban areas, and significantly higher for residents in the bottom deciles.

Figure 4.2: Cumulative distribution functions - farm households and urban households, migrants and non-migrants



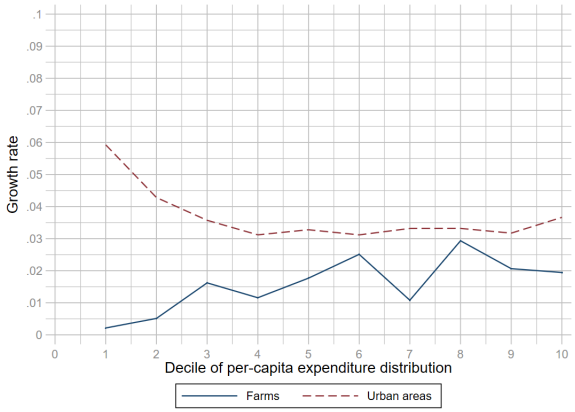
Source: Own calculations using NIDS (2018). *Notes:* The first figure is based on all farm and urban households, the second figure is based on low-income households (defined as having per capita expenditure below R3000 in 2008) that were resident on farms in wave 1 (2008). Migrants in 2008 are individuals that would migrate by 2017, but were resident on farms in 2008.

Figure 4.3: Mean per-capita expenditure by wave: households with expenditure under R3000 per capita in 2008



Source: Own calculations using NIDS (2018). *Notes:* Here average per-capita expenditure for each wave, of all farm and urban residents with initial (wave 1 - 2008) levels below R3000 are plotted over the four waves of the survey.

Figure 4.4: Compound average expenditure growth, by expenditure decile



Source: Own calculations using NIDS (2018). *Notes:* Per capita expenditure is decomposed into deciles and average compound average expenditure growth over the period 2008-2017 (defined as: $(EXP_{W5}/EXP_{W1})^{(1/9)} - 1$) is plotted for each decile.

4.5.2 Difference in Differences

Summary statistics of the variables used in the analysis are presented in table 4.2. In addition, t-test statistics for differences between the means of migrants and non-migrants, pre and post migration are provided. From these descriptive results, correlations with migration can already be identified. While differences in means of key living-standards variables like per-capita expenditure, asset index scores and poverty rates between migrants and non-migrants are insignificant before migration, they become significant in the period after migration, with migrants having higher average levels of per capita expenditure, asset index scores[11] and lower poverty rates. Migrants off farms tend to be younger, but not significantly more or less educated than non migrants in wave 1. While being similar before migration, household size of migrants in wave 5 is significantly smaller than that for non-migrants. Interestingly, the housing conditions, including access to a brick house, electricity and tap water, tend to be better for migrants than non-migrants in wave 1.

The difference in differences results presented in table 4.3 suggest that, over the period of the panel, migration off farms was associated with a 17

[11] Annex B provides an overview of the construction of the asset index.

Table 4.2: Pre-and-post migration summary statistics: Low income farm dwellers

	2008 Non-migrants		2008 Migrants		t-test:diff=0		2016 Non-migrants		2016 Migrants		t-test:diff=0	
	mean	sd	mean	sd	diff	t-stat	mean	sd	mean	sd	diff	t-stat
Log p.c.expenditure	6.43	0.81	6.45	0.68	-0.03	(-0.66)	6.48	0.86	7.10	0.90	-0.38***	(-6.80)
Asset index score	-1.40	1.96	-0.52	2.04	-0.21	(-1.67)	-0.53	2.02	0.01	1.52	-0.68***	(-5.68)
Poor (UBL)	0.78	0.41	0.82	0.39	0.04	(1.67)	0.72	0.45	0.49	0.50	0.14***	(4.53)
Brick dwelling	0.55	0.50	0.70	0.46	-0.15***	(-4.92)	0.63	0.48	0.51	0.50	0.04	(1.29)
Tap water on site	0.55	0.50	0.76	0.43	-0.15***	(-5.16)	0.63	0.48	0.91	0.28	-0.15***	(-5.33)
Flush Toilet	0.35	0.48	0.38	0.49	-0.12***	(-3.91)	0.40	0.49	0.74	0.44	-0.22***	(-7.16)
Electricity access	0.57	0.50	0.74	0.44	-0.08**	(-2.71)	0.67	0.47	0.88	0.33	-0.11***	(-3.72)
Life Satisfaction	5.30	2.35	5.17	2.40	-0.23	(-1.09)	5.68	2.44	5.68	2.40	0.21	(1.05)
Control variables:												
Years education	5.06	4.25	5.97	4.38	-0.57*	(-2.20)	7.16	3.90	8.50	3.79	-0.89***	(-3.50)
Age	26.93	18.48	22.72	16.14	4.18***	(3.83)	36.22	18.27	31.85	14.05	4.23***	(3.88)
Female	0.46	0.50	0.51	0.50	-0.01	(-0.34)	0.46	0.50	0.53	0.50	-0.01	(-0.34)
Female HH head	0.32	0.46	0.49	0.50	0.04	(1.49)	0.52	0.50	0.50	0.50	0.09**	(2.60)
HH size	5.38	3.45	6.48	4.20	-0.07	(-0.31)	6.01	4.48	3.67	2.43	1.52***	(7.56)
Unemployed	0.03	0.16	0.06	0.23	-0.01	(-1.10)	0.07	0.25	0.09	0.29	-0.03	(-1.80)
HH head unemployed	0.04	0.19	0.07	0.26	-0.01	(-0.70)	0.05	0.21	0.09	0.28	-0.06***	(-3.34)
HH pension recipient	1.97	0.17	1.98	0.13	0.00	(0.03)	1.96	0.19	1.99	0.11	-0.01	(-1.39)
Head union member	0.19	0.39	0.15	0.36	-0.03	(-0.85)	0.15	0.36	0.12	0.32	-0.07	(-1.84)
HH child grant recipient	1.92	0.28	1.92	0.27	-0.03	(-1.51)	1.93	0.26	1.92	0.28	0.03	(1.45)
African	0.67	0.47	0.53	0.50	0.08*	(2.54)	0.67	0.47	0.68	0.47	0.08*	(2.54)
Coloured	0.16	0.37	0.19	0.39	-0.07*	(-2.31)	0.23	0.42	0.26	0.44	-0.07*	(-2.31)
Asian/Indian	0.16	0.37	0.27	0.45	0.00	(0.08)	0.10	0.30	0.06	0.24	0.00	(0.08)
White	0.00	0.05	0.01	0.07	-0.01	(-1.79)	0.00	0.05	0.00	0.00	-0.01	(-1.79)
Observations	966		356		1322		842		288		1322	

Source: All variables derived from NIDS (2018). *Notes:* * p<0.10, ** p<0.05, *** p<0.010. Significance levels relate to a two-sided t-test with a null hypothesis that sample means of migrants and non-migrants are equal.

percentage point increase in per-capita expenditure growth by the preferred estimator that includes initial household level fixed effects (IHFE)(column 5). Asset index scores also showed marked increases due to migration.
Secondly, we find that migration is weakly correlated with a decline in life satisfaction (at the 10% level in the preferred specification), broadly in line with results presented by Mulcahy and Kollamparambil (2016) using a broader definition of rural households. However, this result is not as pronounced. This may suggest both a difference due to longer length of the panel available in this study- migrants may initially feel less satisfied, but adjust with time - or a difference due to the fact that Mulcahy and Kollamparambil (2016) grouped farm and traditional dwellers while here the focus is only on farm dwellers.
The results also suggest that migration was associated with improvements in electricity access, access to flush toilets and water on site. However, it is also associated with a decrease in the probability of living in a brick structure. The main driver of this result, as illustrated in table 4.2, is that migrants are likely to come from areas where housing is already of better quality. This might suggest either a geographic variation in who migrates that is associated with housing quality - for example if housing on farms close to towns is better than that further away and this is also correlated with migration.

As a preliminary answer the question of what the source of increased expenditure growth for migrants is, table 4.4 suggests that this may arise as a result of increased labour market incomes that migrants experience. While the difference in the average share of household income from the labour market between non-migrants and migrants was not significant in wave 1, post-migration the labour income shares of migrants had increased more than those of non-migrants and the difference became significant. The results in table 4.4 should be accompanied by the caveat that missing data for either labour or grant incomes results in a small sample size.

4.5.3 Variation in treatment periods

The main difference in differences analysis presented in table 4.3 above is based on a two-period, two-group estimation procedure. In the NIDS data, given that respondents are interviewed every two years, the time of migration from farms to urban areas can be approximated. Mono-directional migrations over the entire period of the panel could occur at four intervals between the five waves. The set of all migrants is the sum of these migrations at different periods in the panel. As a robustness check, we create

Table 4.3: Migration Difference in Differences estimates

	(1)	(2)	(3)	(4)	(5)
ΔLog-per capita expenditure	0.355***	0.218***	0.214***	0.280**	0.167***
	(0.072)	(0.059)	(0.058)	(0.109)	(0.060)
ΔAsset index	0.440**	0.474 **	0.537***	0.385*	0.435**
	(0.178)	(0.172)	(0.166)	(0.219)	(0.185)
ΔLife satisfaction (1-10)	-0.434	-0.432	-0.425	-0.213	-0.65*
	(0.287)	(0.284)	(0.283)	(0.368)	(0.043)
Δ Electricity access	0.028	0.069*	0.089**	0.118**	0.056
	(0.042)	(0.039)	(0.037)	(0.050)	
Δ Flush toilet	0.099**	0.156***	0.146***	0.114***	0.168***
	(0.043)	(0.041)	(0.039)	(0.052)	(0.043)
Δ Water on site	0.002	0.071*	0.069*	0.104**	0.055
	(0.041)	(0.036	(0.036)	(0.048)	(0.37)
Δ Brick house	-0.186***	-0.161***	-0.162***	-0.063	-0.157***
	(0.043)	(0.044)	(0.044)	(0.051)	(0.051)
Full Controls	NO	YES	YES	YES	YES
Province fixed effects	NO	NO	YES	YES	NO
Kernel PSM	NO	NO	NO	YES	NO
IHFE	NO	NO	NO	NO	YES
Observations	2452	2363	2363	2339	2363

Source: Own calculations using NIDS (2018) *Notes:* * p<0.10, ** p<0.05, *** p<0.010. Huber-White robust standard errors in parentheses. Each coefficient relates to a separate regression and Δ represents the change in the growth of the variable associated with migration. IHFE stands for initial household fixed effects. Control variables include: age, gender, household size, unemployment status, HH pension recipient, HH child grant recipient, race, province.

separate variables capturing when migration occurred. This allows us to see whether the difference in differences coefficients vary systematically based on the time of migration[12].

We assume that while there might still exist unobserved heterogeneity between migrants and non-migrants that the baseline analysis cannot account for, the time of migration would not impact living-standards outcomes other

[12]In addition, the variation in migration times provide an opportunity to examine whether the parallel trends assumption is justified: see Annex C in the Appendix.

Table 4.4: Household labour and government grant income as a proportion of total income: migrants and non-migrants, pre and post migration

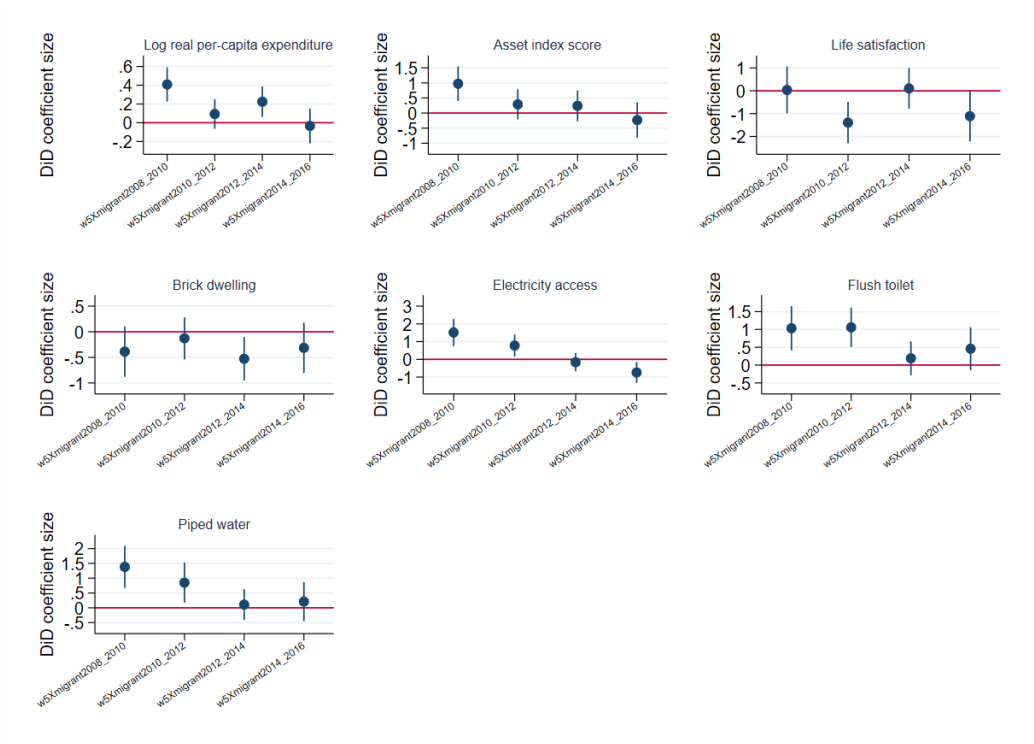
	Wave 1			Wave 5		
	Non-migrants	Migrants	t (diff)	Non-migrants	Migrants	t (diff)
Labour income	0.60	0.67	(-0.85)	0.66	0.77	(-2.92)**
	(0.28)	(0.24)		(0.23)	(0.19)	
Grant income	0.38	0.31	(1.45)	0.30	0.21	(2.55)*
	(0.28)	(0.23)		(0.20)	(0.18)	
N	521	202	723	532	131	663

Source: Own calculations using NIDS (2018). *Notes:* These figures are based on a sample of respondents with non-missing household labour and grant income data. The t-statistics are for a two-sided t-test with the null hypothesis that the difference in sample means is zero.

than through the cumulative effects of migration. The hypothesis is that the effects of migration would become stronger over time i.e. that the difference in differences coefficients would become systematically larger (for positive effects) based on the time of migration. This would be consistent with a situation in which there exist structural differences between farms and urban areas that may not be initially evident. Figure 4.5, below provides an overview of how the coefficients change based on the time of migration and show a clear trend for the majority of the outcome variables.

For all the outcome variables, the effects are not statistically different from zero for migrants who had only migrated in the period between wave four and five. For all the outcome variables except for the dwelling type and life satisfaction variable, the effects are positive, large and statistically different from zero for migrants between the first and second waves. For per capita expenditure, the asset index, electricity access, access to a flush toilet and piped water, there is a clear upward trend in the size of the coefficients for earlier migrations. These results suggest that the impacts of migration become more prominent over time. In addition, while there may be unobserved differences between migrants and non-migrants that the baseline specification in equation 4.1 cannot account for, these differences are likely to be much smaller between early and late migrants. As such these results support the validity of the baseline results presented in Table 4.3 given the evidence of systematic variation in coefficient size based on the time of migration.

Figure 4.5: Coefficient size based on time of migration



Source: Own calculations using NIDS (2018). *Notes:* The plots provide an indication of difference in differences coefficient sizes for migrations at various stages of the panel. For example, $w5Xmigrant2008\_2010$ is the DiD coefficient for migrations that took place between the first and second waves of the survey. Each plot represents a separate regression. 95% confidence intervals shown. Full controls included.

4.6 Discussion

The results presented here suggest that migration off commercial farms has mixed implications for farm dwellers. On the one hand, the results suggest that on average, the migration was associated with at least a 17 percentage point increase in per-capita expenditure growth compared to non-migrants. Similar positive effects on living standards are displayed for access to electricity, asset ownership, access to piped water and flush toilets. In addition, the descriptive results presented in Figure 4.4, suggest that increases in income that migrants experience arise mainly from increases in labour market income, as opposed to from other sources.

There are various likely reasons for this. For one, these results suggest that the economic benefits arising from density, explored in Collier and Venables (2016) are still significantly larger in urban areas than on farms. This comes despite the slowness of spatial restructuring of South African urban areas, high rates of urban unemployment and capacity challenges in municipal service delivery. The fact that in a period of ten years, a quarter of the sample of low income farm dwellers who were contacted in both wave 1 and wave 5 had moved to urban areas is likely due in part to some low income residents recognising this. The results also point to the large differences in service provision between rural and urban areas, in particular with respect to water and electricity. In addition, rural public transport, for example is virtually non-existent and Kerr (2018) suggests there are instances where this allows for cartel-like behaviour by minibus taxis on some rural routes. Labour law violations, such as minimum wage non-compliance attested to in Bhorat et al. (2015) -partially the result of high enforcement costs- are difficult to monitor and physical distance makes it difficult for farm-dwellers to access services that support their rights.

On the other hand, the results suggest that the dwellings migrants move into are of a lower quality than those on the farms they migrate from. This could for example be the case where migrants move into backyard shacks, or informal settlements. There are clear reasons why farm dwellers may prefer residence on farms that have not been examined here. These may include a historical sense of belonging and a sense of community, a closeness to nature, greater safety from every-day crime and potentially lower living costs as a result of close relations with farmers and other farm dwellers. The evidence presented here is clearly not conclusive that life in urban areas is "better". However, the results do suggest that there may be significant material gains associated with moving to urban areas that can support efforts to decrease poverty. As such, these results have some relevance to government pol-

icy towards the provision of housing for farm-workers. Current debates on farmworker housing provision often centre on on-farm tenure security and existing legislation includes subsidies to farm owners to improve farm dweller housing on the farm[13]. However, the reality is that a growing proportion of farm-workers reside in urban areas and commute to work, illustrated in this chapter as well as in the previous chapter in Table 3.3, as well as by Visser and Ferrer (2015) and Visser (2016). Schools and hospitals are closer and economic opportunities may be more.

In many cases, geographic distance make it practically impossible for farm-workers to work on farms and stay in urban areas. In addition, the political explosiveness of the historical issue of farmworker tenure security and access to land is likely to make decision making around this issue difficult. As such there are clearly no general implications of the evidence presented here. Support should however exist for the provision of voluntary urban housing for farm dwellers in cases where this is practically feasible. Legislation should reflect the fact that a growing number of farmworkers are living in urban areas and that there may exist substantial economic benefits associated with the provision of urban housing for farm dwellers in general. In turn this can have the potential to support efforts at poverty alleviation.

[13]See for example the Extension of Security of Tenure Amendment (Bill number 24B of 2017)

Chapter 5

Conclusion

Together the issues of growing firm size and rural-urban migration of low-income farmworkers and farm dwellers are two important aspects of a process of agrarian change taking place in South Africa. Aspects of this transformation started before the democratic transition (Wegerif et al., 2005; Liebenberg, 2013; Liebenberg & Pardey, 2012). However, these trends have continued and arguably accelerated in the post-apartheid period as a result of the dual impacts of the introduction of labour legislation and economic liberalisation that have imposed higher costs on producers (Atkinson, 2007; Visser, 2016).

This dissertation has attempted to provide insight into aspects of how the changing nature of South African agriculture, through these two interlinked processes, has impacted on the living standards of low-income farmworkers and dwellers. Chapter 2 provides an overview of the nature of economic, legislative and regulatory changes in the post-apartheid period. Chapter 3 asks whether consolidation in the industry has extended to firm size and what this might mean for agricultural policy. Chapter 4 uses individual level panel data and a difference in differences model to approach the question of what happens when low-income farm dwellers move to urban areas, in light of evidence that an increasing number of farmworkers reside in urban areas. This conclusion summarises the key findings.

Firstly, labour force survey data for the period 2000-2017, presented in Chapter 3 suggests that an increasing proportion of farmworkers are working in large firms with over 50 workers. In particular this figure increased from 33% of all farmworkers for the period 2000-2002, to 42% for the period 2015-2017. Earnings in these large firms are significantly higher than those in small firms, a result that firm-size earnings regressions controlling for in-

dividual characteristics supports. This firm-size earnings relationship is also robust to the assumption that small firms may pay higher in-kind wages and is also well documented in the international literature.
On the one hand, these results support fears expressed by Piek and von Fintel (2017) that labour legislation and a lack of government support is leading to heightened inequality between firms in the agricultural industry as small firms struggle to compete in product markets dominated by large supermarket chains and to comply with labour legislation as a result of economies of scale.
On the other hand, these results suggest that large export-oriented firms may be an important avenue to support both poverty alleviation and the creation of diversified jobs, by virtue of their insertion into global value chains and their ability to create upstream and downstream linkages. At the least, this should be an important consideration in current debates on agrarian policy in light of widespread support found in both policy documents and public debate for a model of smallholder agriculture.

Secondly, the difference in differences estimates presented in Chapter 4 suggest that migration of low-income farm dwellers into urban areas is associated with significant material gains in per-capita incomes, asset ownership, water and electricity access. However, migrants off commercial farms likely move into lower-quality housing than the farms they come from. This would be consistent with a situation in which migrants move into back-yard shacks or informal settlements, waiting for the provision of state-subsidized housing. This supports calls for improved legislation related to housing provision for farmworkers, in order to reflect the fact that more farmworkers are living in urban areas and current legislation focusses on on-farm housing (Visser & Ferrer, 2015). In addition, the results suggest that despite capacity challenges and the slow rate of structural change away from apartheid-era spatial plans, South African towns and cities still provide avenues to opportunities that improve living standards. The benefits of density are a powerful factor driving these gains from urbanization (Collier & Venables, 2016).
Finally, this result should not be construed as implying that farm evictions are in fact benign. There are clearly various and important reasons why farm dwellers would want to remain on farms and their rights to do so should be supported. In addition, this research could not differentiate between the impacts of voluntary and involuntary migrations. Instead, these results are a reminder that urbanization has historically been an important driver of economic development and poverty reduction, and that this should be kept in mind in debates around the future of life on South African farms.

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Chapter 6

Appendix

6.1 Annex A: Sectoral trends in South African Agriculture

Figures 6.1,6.2 and 6.3 show long term trends in farm numbers, value added and capital investment in Agriculture.

Figure 6.1: Number, total area and average size of farms, 1918-2007

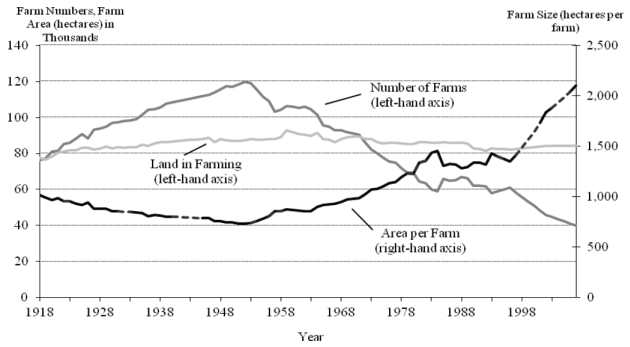
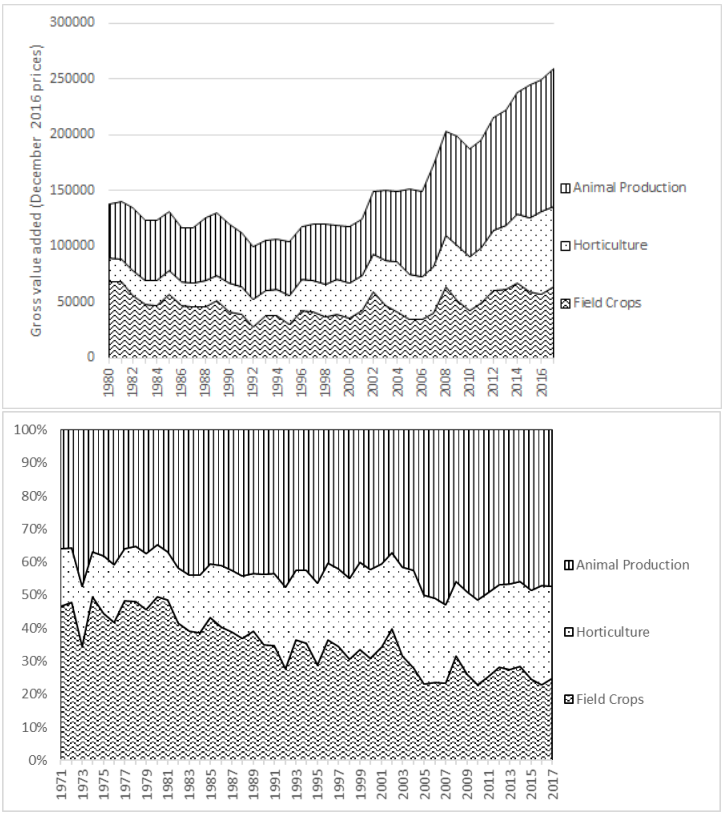


Figure 2: Number, total area and average size of farms, 1918–2007

Source: Liebenberg et al. (2012)
Note: Dashed sections of farm size plot indicate estimates (via linear interpolation).

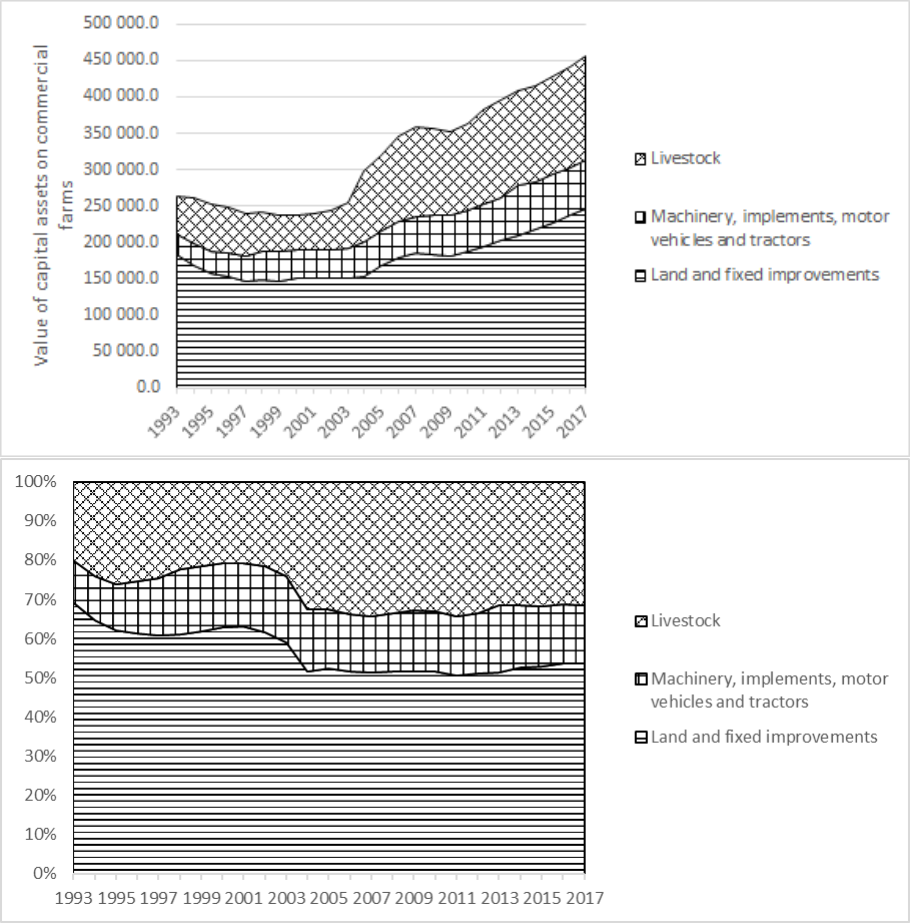
Source: Directly from Liebenberg and Pardey (2012)

Figure 6.2: Total and relative gross value added in Agriculture, by sector



Source: Own calculations based on Statistics South Africa (2018). CPI data used to construct real GVA totals is sourced from Statistics South Africa (2019).

Figure 6.3: Total and relative value of capital investment on commercial farms



Source: Own calculations based on Statistics South Africa (2018). CPI data used to construct real totals (in December 2016 prices) in the top graph is sourced from Statistics South Africa (2019).

6.2 Annex B: Creation of the asset index as an alternative measure of socio-economic status

In order to create the asset index as an alternative measure of socio-economic status to per-capita expenditure, the following steps were followed. Household assets are identified in the NIDS questionnaire and in order to create the index, data across all waves are collapsed to create a mean asset ownership variable for each variable. Based on this average, relative wealth scores are predicted for each household in each wave. Principal component analysis (PCA) is used to derive the asset index, resulting in a measure with a mean of zero and standard deviation of 1. The Kaiser-Meyer-Olkin measure of the sampling adequacy of the index, is 0.781, characterised by Kaiser (1974) to be "middling". Table 6.1, below provides an outline of the various assets which constitute the index and their correlates. The component loadings are also displayed in Table 6.2.

Table 6.1: Index components: correlations

	Fridge	Elec/gas stove	Radio	Television	Cellphone
Fridge	1.000				
Elec/gas stove	0.510	1.000			
Radio	0.165	0.133	1.000		
Television	0.541	0.475	0.200	1.000	
Cellphone	0.265	0.253	0.101	0.254	1.000

Source: Own calculations using NIDS (2018)

Table 6.2: Asset index scoring coefficients

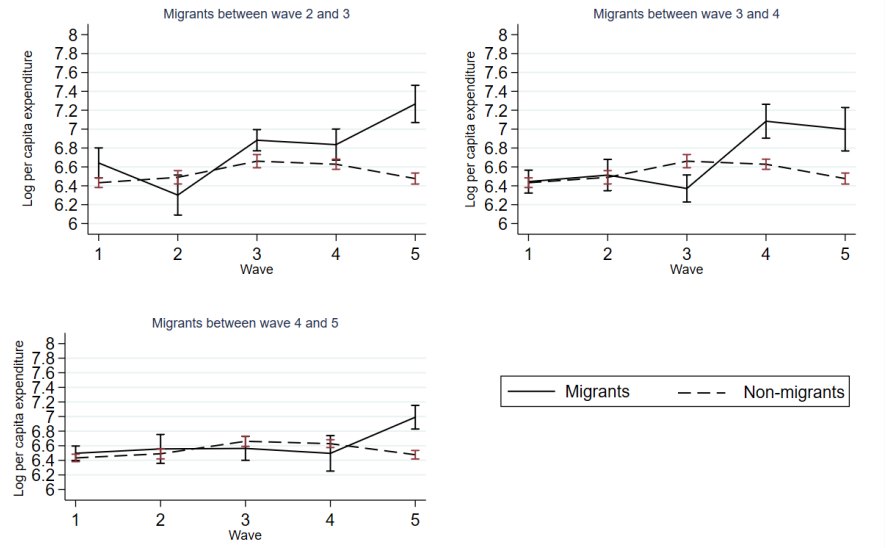
	Weight in index	Sample mean	Standard deviation
Fridge	0.53	0.72	0.38
Elec/Gas stove	0.50	0.80	0.33
Radio	0.26	0.64	0.38
Television	0.53	0.77	0.35
Cellphone	0.35	0.87	0.26

Source: Own calculations using NIDS (2018)

6.3 Annex C: Parallel trends

While one can never truly observe the parallel trends assumption which is a key identification condition for difference in differences models, the panel nature of the NIDS data allows for a visual representation of the pre-and-post migration trends for migrants and non-migrants. The counter-factual of what would have happened had migrants not moved to urban areas cannot be observed, but we can observe what happened in the period before migration. Figure 6.4, below provides some evidence that the parallel trends assumption may hold in the case of per capita expenditures. Per capita expenditure levels before the time of migration for migrants and non-migrants followed each other (95% confidence intervals are shown). The figures do suggest that in the period leading up to migration there is a possibility that migrants experienced a relative decline in expenditure. In all cases, migration is correlated with statistically significant increases in per-capita expenditure.

Figure 6.4: Mean per capita expenditure: Parallel trends in pre-migration outcomes for migrants and non-migrants



Source: Own calculations using NIDS (2018). *Notes:* The above graphs show mean log per capita expenditure for migrants and non-migrants at various stages of the panel. 95% confidence intervals shown.