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## **Informality and Inclusive Growth in Sub-Saharan Africa**

Aalia Cassim, Kezia Lilenstein, Morné Oosthuizen and Francois Steenkamp  
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Informality and Inclusive Growth in Sub-Saharan Africa  
Aalia Cassim, Kezia Lilenstein, Morné Oosthuizen\* and Francois Steenkamp  
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# Informality and Inclusive Growth in Sub-Saharan Africa

Aalia Cassim, Kezia Lilenstein, Morné Oosthuizen\* and Francois Steenkamp

## Summary

Despite relatively high growth rates, improvements in poverty and inequality have been constrained in many developing countries over the last decade, suggesting that economic growth has not been inclusive. In part, this relates to low levels of participation in the formal economy as well as high incidence of informality and unemployment in these countries. This research seeks to explore the relationship between informality and inclusive growth in sub-Saharan Africa, with a particular focus on South Africa. South Africans typically hold one of two opposing views on the informal sector. The first is that informality should be encouraged as an under-utilised source of new employment; the second is that it should be discouraged as an inferior source of employment. The central research question is therefore: 'Do informal labour markets promote or constrain inclusive growth?' In order to examine the hypotheses, we use three different methodologies. Firstly, we undertake a regional evidence synthesis examining literature and case studies from the sub-Saharan Africa region. Secondly, we expand on the South African case study and examine the nature of transitions within the labour market. Thirdly, we examine to what extent income shocks may impact the likelihood of engagement within the informal sector.

**Keywords:** Informality; Informal Sector; Inclusive Growth; Africa; South Africa.

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# Executive summary

In the last decade, developing economies have recorded relatively high growth rates, yet in a number of instances, there is a limited impact on poverty and inequality, suggesting that economic growth is not inclusive. In part, this relates to the fact that a large number of individuals are not participating in the formal economy and are informally employed or are unemployed, a phenomenon observed in both Africa and Latin America. The informal sector provides a range of heterogeneous employment opportunities. However, with many adults isolated from the formal economy, the inclusiveness of economic growth in these regions has arguably been constrained. This research seeks to better understand the relationship between informality and inclusive growth in Africa, with a particular focus on South Africa. South Africa stands out in the region for having relatively high levels of unemployment and low levels of informal employment. As a result, one of two opposing views is typically held by South Africans: the first is that the informal sector is an under-utilised source of new employment and it should be promoted since ‘any employment is better than unemployment’; the second view is that informality should be discouraged given its inferior quality, and that the focus should be on creating decent jobs in the formal sector. The central research question is therefore: ‘Do informal labour markets promote or constrain inclusive growth?’ We investigate three hypotheses in terms of the central research question:

- i. Informality may promote inclusive growth by acting as a buffer to unemployment and creating opportunities for vulnerable populations
- ii. Informality may constrain inclusive growth by negatively impacting growth and jobs in the formal sector
- iii. Facilitating transitions from unemployment to informal employment and from informality to formality through public policy promotes inclusive growth

In order to examine the hypotheses, we use three different methodologies. Firstly, we undertake a regional evidence synthesis examining literature and case studies that lend themselves to the hypotheses within the sub-Saharan Africa region. Secondly, we expand on the South African case study and examine the nature of transitions within the labour market. This includes the transition into the informal labour market from a state of unemployment as well as transitions from the informal to the formal labour market. In the South African case, where unemployment is significant, transitioning into the labour market is likely to improve an individual’s earnings and welfare thereby promoting inclusivity within with economy. Thirdly, we examine to what extent income shocks may impact the likelihood of engagement within the informal sector. In the case of South Africa, we examine whether household receipt of non-contributory state pensions, by relaxing household-level resource constraints, impacts the level of engagement in the informal sector at the household level.

In terms of the three hypotheses, the regional evidence on sub-Saharan Africa suggests a number of key findings. Firstly, the informal sector promotes inclusive growth through providing an alternative to unemployment when there are no alternative employment opportunities available. This is particularly relevant for people with lower education, and for women and young people. In addition, we find that in certain countries there are instances where self-employment becomes an option during economic downturn, negatively impacting the agricultural sector in particular. Secondly, the informal sector may inhibit inclusive growth if workers are put in precarious positions, such as when earnings and benefits are outweighed by ill health and job insecurity. Thirdly, the impact of the informal sector on the formal sector will depend on the size of an informal enterprise, proximity to consumers as well as linkages to the formal sector. It is often the case that the formal and informal sectors work at different parts of the value chain to meet the same end objective.

Lastly, the informal sector is a significant economic contributor and employs large majorities of individuals in countries within the sub-Saharan African region. Policymakers should

therefore be aware of the many livelihoods derived from the informal sector when designing policies that promote inclusive growth. Attempts to enforce formalization through regulation have often had non-optimal outcomes: micro-enterprises are either pushed out of the market or continue to operate informally and institutions are often too weak to enforce compliance. In addition, there may be little incentive for micro-enterprises to formalise if the gains from operating in the formal sector do not outweigh the costs of formalisation. The evidence suggests that firms facing external constraints that can be dealt with in the short term through interventions such as providing access to credit, energy sources and space are far more likely to grow and prosper than survivalist firms. Survivalist firms would benefit from managerial training and other skills. Upon overcoming external constraints, non-survivalist firms may grow organically and want to compete in the formal sector. In the African context, policymakers should therefore recognise the heterogeneity of informal sector enterprises and deal with the various constraints instead of using blanket regulation.

Section five examines informal employment in South Africa in more detail. In terms of the labour market transitions we find that individuals are more likely to transition from unemployed to formal employment rather than informal employment. Only a minority of individuals in the sample transitioned from unemployment into informal self-employment. The bulk of those that transitioned from unemployment, however, became economically inactive ('not economically active'). In terms of informal employees, the primary transition observed was to formal employee, which is a positive move. The transition from informal self-employment to formal self-employment is rare and the bulk of the transitions captured from the informal self-employment segment were into economic inactivity. These results, and particularly the large cohorts transitioning into inactivity, are indicative of South Africa's small informal sector and thus the limited opportunities available for low-skilled individuals. Further, while the sub-Saharan Africa region is synonymous with underemployment in the informal sector, these transitions to economic inactivity, coupled with high levels of unemployment, indicate the relative prevalence of non-employment in South Africa.



# 1 Introduction

In the last decade, a number of emerging markets have recorded relatively high growth rates yet many struggle to convert this into improvements in well-being, material welfare and equality, suggesting that economic growth is not inclusive. In part, this is related to the fact that a large number of individuals do not participate in the formal economy and are either informally employed or unemployed. Besides having lower household incomes, this group may also lack access to non-income welfare benefits provided by the state, thereby restricting development outcomes. However, it is also true that for a large proportion of the population informal employment may represent a superior alternative to unemployment.

The purpose of this research is to better understand the relationship between informality and inclusive growth in different country contexts. Informality is considered to have both positive and negative impacts on welfare and inclusive growth. On the one hand, informal employment plays a key role in absorbing the unemployed into employment, as well as acting as a buffer to unemployment during economic downturn; this may promote the inclusivity of economic growth. However, a large informal sector has implications for aggregate productivity levels, is often insecure, unstable, poorly remunerated, and lacks legislated protections for workers. There are broader economy-wide implications too, as informal sector workers do not form part of the tax base. In addition, informal workers are often less well off than those in the informal sector, limiting the extent of inclusive growth outcomes. These outcomes are, however, highly contextual.

The pressure on African governments to engender inclusive patterns of economic growth is immense. The continent has lagged behind the rest of the world in reducing poverty over the past two decades. While globally extreme poverty, understood as living on less than \$1.25 per day, more than halved between 1990 and 2011—falling from 36.4 per cent to 14.5 per cent—extreme poverty in sub-Saharan Africa fell from 56.6 per cent to 46.8 per cent in the same period (World Bank Group 2015), with the result that the region now accounts for a larger share of extreme poverty worldwide. Economies across the continent have failed to create sufficient numbers of jobs for growing populations, meaning that more and more people entering into the labour force are finding that the only opportunities for employment are within the informal sector. Between 1980 and 2010, the total working-age population in sub-Saharan Africa grew by just under 8.5 million per year; over the next 40 years to 2050, it is estimated to grow by a further 21.5 million on average annually (own calculations, United Nations 2015). Given current labour force participation rates of around 70 per cent among 15 to 64 year-olds, this translates into demand for more than 1.25 million net new jobs per month on average over the next 40 years. Growth among the working-age population has the potential to generate significant economic benefits—known as the demographic dividend—but these benefits can only be fully and sustainably realised if the working-age population has access to productive, appropriately remunerated employment. As a result, if sub-Saharan African countries are to harness the gains associated with the demographic dividend, a deeper and more nuanced understanding of informality and its potential effects on the degree of inclusivity of economic growth is required.

The policy discourse in South Africa is mixed, and whilst the informal sector can play a key role in terms of absorbing the unemployed, its growth has to some extent been constrained relative to other countries in the continent, due in varying parts to historical considerations, stringent legislation and red tape. Policy making at national, provincial and local levels is not consistent and is often conflicting in its approach to the informal sector. However, the predominant view is that unemployment can (and should) be lowered through entrepreneurship and self-employment in the informal sector. Yet very little is known about the rate at which transitions into different types of employment happen and, in particular, what factors promote movements into self-employment. By exploring these issues, this paper

contributes to filling an important research gap that will be useful for informing policymakers of the context in which decisions are made and for making policy recommendations to promote more inclusive growth.

### *Central research question*

Given the importance of promoting inclusive growth and the role that informal labour markets play in African economies, the central research question is: 'Do informal labour markets promote or constrain inclusive growth?' To respond to this question, this study has two key aims. Firstly, to understand the nature of transitions from one labour market status to another (e.g. from unemployment to informal sector employment), as well as the factors that may promote or inhibit these transitions. This offers a starting point to understanding the relationship between informal employment and inclusive growth. Secondly, we examine to what extent an income shock can affect transition into the labour market. Using data on South Africa, we examine the potential relationship between receipt of social benefits and household-level engagement in the informal sector.

Throughout the paper, our overriding interest is in understanding the potential impacts of the informal sector on inclusive growth. While economic growth is clearly a *sine qua non* for inclusive growth, our focus is on the nature of inclusiveness and we pay particular attention to impacts related to reductions in poverty (or, more broadly, welfare) and inequality.

## 2 Research design and methods

### 2.1 Conceptual issues

This research revolves around two core concepts—inclusive growth and informality—neither of which has a universally accepted definition. Inclusive growth is broadly understood as growth accompanied by poverty reduction and equitable opportunities for all segments of the population. In their note on defining inclusive growth published by the World Bank, Ianchovichina and Lundstrom (2009) posit that inclusive growth should '[raise] the pace of growth and [enlarge] the size of the economy, while leveling the playing field for investment and increasing productive employment opportunities'. The African Development Bank views inclusive growth as 'economic growth that results in a wider access to sustainable socio-economic opportunities for a broader number of people, regions or countries, while protecting the vulnerable, all being done in an environment of fairness, equal justice, and political plurality' (AfDB 2013). It is our view that growth cannot be judged to be truly inclusive without improvements in equality or, at the very least, reductions in instances of extreme inequality. Without a standard definition, measurement of inclusive growth is not standardised either. From the perspective of the current research, we consider Gross Domestic Product (GDP) per capita, poverty, inequality, employment opportunities and quality of employment (including monetary and non-monetary benefits) as measuring different facets of inclusive growth.

For a phenomenon as pervasive as informality, there is surprisingly little consensus on how to define it (Kanbur 2009 and 2011). One reason for this confusion relates to the broad yet inconsistent use of terms such as 'the informal sector', 'informal employment' and 'the informal economy' across the developing world. Fields (2011) explains that, because each country may have a specific 'working definition' of these terms, estimates of the informal economy may be measuring different forms of economic activity. Furthermore, within a country, an accepted 'norm', rather than a defined rule, for measuring informality may have evolved. Since norms are perhaps more open to interpretation, this creates further difficulties in measuring informality consistently at the country level.

The International Labour Organization (ILO) employs two approaches in defining informality. First, the 15<sup>th</sup> ILO International Conference of Labour Statisticians (ICLS) applied an enterprise-based approach, defining informal sector employment as ‘all jobs in informal sector enterprises or all persons who ... were employed in at least one informal enterprise, irrespective of their status in employment and whether it was their main or secondary job’ (Husmanns 2004). The 17<sup>th</sup> ICLS extended the definition by incorporating an employee-based definition of informality. Thus, it includes characteristics of the employee’s job regardless of the ‘formality’ of the enterprise. We make use of both approaches in our analysis since together they inform a more nuanced understanding of the dynamics of informality, and both are used extensively in the literature.

## 2.2 Hypotheses

In exploring our central research question, we investigate three specific hypotheses. First, *informality may promote inclusive growth by acting as a buffer to unemployment and creating opportunities for vulnerable populations*. By providing incomes to those who might otherwise be unemployed, informality allows individuals to engage in the economy and potentially benefit from economic growth. This is relevant for the structurally unemployed—those who have limited access to the formal labour market—and for the cyclically unemployed who may enter the informal sector during economic downturns.

Second, *informality may constrain inclusive growth by impacting growth and jobs in the formal sector*. Lower quality employment and lower productivity in the informal sector constrains economic growth at a macro level, and may erode tax income. The ability of informal sector firms to avoid various costs associated with operating in the formal sector may provide them a competitive advantage, hampering the performance of formal sector firms while at the same time undermining incentives for firms to formalise.

Third, *facilitating transitions from unemployment to informal employment and from informality to formality through public policy promotes inclusive growth*. The idea of transitions is relevant to both individuals, as they enter and exit different labour market states, and firms, which must choose between operating formally or informally. Facilitating transitions may help ensure a more efficient allocation of resources and greater benefits for workers, firms and society as a whole. What types of policies have been successful (or not) in encouraging ‘beneficial’ transitions—from unemployment to employment, from informality to formality—for both individuals and firms?

## 2.3 Methodology

In exploring the relationship between informality and inclusive growth, we rely on three key methods.

*Regional evidence synthesis:* Both African and Latin American papers synthesise literature and case studies from their respective regions to examine the three hypotheses. As a result of this process, we identify the research gaps that we aim to fill through investigating the South Africa case study, presented in section 5.

*Transition matrices:* Transition matrices for the working-age population in South Africa allow us to investigate the extent to which there is churning in the labour market, and to identify whether certain transitions are particularly common or rare. They also enable the identification of differences in mobility for different groups.

*Regression Discontinuity Design (RDD):* One of the key questions raised in this research revolves around the extent of ‘beneficial’ labour market transitions. Within the South African context, the particular transition that we are interested in is that from unemployment to

informal sector employment. Since resources often represent a key constraint in seeking work or starting a business, we investigate whether a positive income shock—in the form of receipt of the state old age pension—has an impact on the likelihood of working-age adults taking up informal sector employment. To do this, we employ an RDD method using data from the South African General Household Survey of 2014. In this aspect, the Africa and Latin America papers diverge methodologically, although both seek to answer the same general question: do income shocks facilitate labour market transitions that promote inclusive growth? The research undertaken does not expect to obtain a simple answer to this question. Instead, it seeks to highlight contexts in which informality may have particular implications—whether positive or negative—for the inclusivity of economic growth.

### 3 Informality and inclusive growth in Africa

Despite robust economic growth across the region over the past decade or so, few if any sub-Saharan Africa countries translated this into large scale expansion of the formal employment sector. Instead, informal employment<sup>1</sup> (both inside and outside the informal sector) plays a significant role in absorbing labour. Overall informal employment is estimated at about 66 per cent of total non-agricultural employment in the sub-Saharan Africa region, the bulk of which is represented by informal enterprises and the self-employed (53 per cent combined) (Vanek et al. 2014). Informal employment outside of the informal sector represents just 14 per cent of total informal employment. Roughly one-third of informal employment is waged employment and two-thirds self-employment (Vanek et al. 2014). The informal sector typically absorbs more vulnerable groups of workers into employment, including women and youth. In sub-Saharan Africa, 74 per cent of employed women, for example, find themselves in informal employment relative to 61 per cent of men (Vanek et al. 2014).

Cross-country comparisons are constrained by the availability of comparable data and, in the area of informality, this is a significant problem. Within Africa, the extent to which the ILO 'dual-component' definition, which measures both the informal sector and informal employment, is employed in national labour market analyses varies. This can be seen clearly in Table 1 provided in Appendix A to this report. In some countries, such as Botswana, Lesotho and Tanzania, informality is defined based purely on the characteristics of the production units, while other countries apply an extended definition that takes into account informal employment relationships. It is also clear that the exact manner in which statistical agencies define the informal sector or informality can vary significantly. For instance, when defining the informal sector, some countries only look at registration of enterprise criteria, while others look at multiple criteria, including size of the enterprise, or whether the accounts of the enterprise are separate to those of the owner. Informal employment, though, is defined using a large and varying array of criteria across countries. This problem is, however, not unique to sub-Saharan Africa.

Despite this, international comparisons are attempted as a matter of course. Figure 1 ignores these definitional issues and presents estimates of informal sector employment as a share of non-agricultural employment in low- and middle-income countries for which data exists. Significant variation can be observed in the extent of informality globally. Data for either measure exists for just 11 African countries. Within the region, informality is least widespread

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<sup>1</sup> It is worth reiterating the difference between the informal sector and informal employment here. The former refers specifically to the nature of the enterprise, whereas the latter refers more to the protections enjoyed by workers. Vanek et al. (2014) describe informal employment as 'all employment arrangements that leave individuals without social protection through their work, whether or not the economic units they operate or work for are formal enterprises, informal enterprises or households' Thus, it is possible to be informally employed within the formal sector.

in Mauritius and South Africa, and most prevalent in Cote d'Ivoire and Mali. In comparison, the range is substantially narrower within Latin America.

The informal sector is a significant source of production and employment in African countries: it is estimated to account for about 55 per cent of total GDP in sub-Saharan Africa and to employ 80 per cent of the workforce (AfDB 2013). Given limited work opportunities in the formal sector, the informal sector represents a crucial avenue of economic participation for the most vulnerable segments of the population including the poor, women and youth. However, a commonly held view is that if economic growth is not associated with better employment opportunities or an improvement in the conditions of employment in informal activities, then the impact of growth on poverty and inequality will be minimal (ILO 2009).

### 3.1 Informality as an alternative to unemployment

Unemployment rates in low-income sub-Saharan Africa countries such as Liberia, Zimbabwe, Tanzania and Uganda are fairly low (Figure 2). Unemployment tends to be higher in middle-income sub-Saharan Africa countries (Golub and Hayat 2014), such as South Africa where unemployment is far higher at 25 per cent. In lower income countries, however, Fields (2012) suggests that unemployment is not an option for the poor and unskilled, who are often self-employed in subsistence agriculture or in the urban informal sector. In 2012, according to the ILO, own-account workers<sup>2</sup> made up more than half of all workers in Zambia, Burundi, Uganda and Tanzania (ILOSTAT 2015).

In a number of SSA countries, rural-urban migration has resulted in the expansion of the urban informal sector because growth amongst the formal private and public sectors in urban areas is limited. Migration of rural dwellers to urban areas can be explained by the Harris-Todaro model (1970), which assumes that the decision to migrate is based on expected income differentials between rural and urban areas. This means that even where urban unemployment is high, rural-urban migration can be economically rational if expected urban income is greater than rural income. Benjamin and Mbaye (2014) suggest that key reasons behind African rural-urban migration patterns are the desire to gain better access to public services and higher income generating opportunities.

#### *More opportunities within the informal sector*

Existing literature identifies two main reasons for the preference of informal employment over unemployment. Firstly, for many Africans informal employment represents the only option to generate an income in the face of significantly limited alternatives. Household surveys carried out in Tanzania and the Republic of Congo, for example, reported that the primary reason for entering the informal sector was difficulties in finding wage employment (Benjamin and Mbaye 2014). Golub and Hayat (2014) highlight limited demand for labour in Africa, particularly in countries that have failed to diversify their industrial sectors or absorb low-skilled workers into higher value-added activities. In sub-Saharan Africa, about 20 per cent of exports are classified as industrial but most of these are in fact modestly processed primary products (Gelb 2009). Of total industrial exports, barely a quarter are true manufactured goods, and the two major categories—automotive products from South Africa and clothing exports from low-income countries—are supported by incentive programmes (Gelb 2009; IMF 2007). The industrial sector has only created a limited amount of employment, leaving the informal sector as one of the only options in which to earn a living. What is more, a comprehensive review of African employment trends by Fox and Oviedo (2013) found very low levels of wage employment in 2005 across all sectors, typically only about 10 to 15 per

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<sup>2</sup> Own-account workers are those workers who, working on their own account or with one or more partners, hold the type of job defined as a 'self-employment job' ... and have not engaged on a continuous basis any 'employees' to work for them during the reference period (ILO 1993).

cent of the total labour force. In South Africa, Lund (1998) finds that the informal sector in Durban offers employment to unskilled women who would not easily find a job elsewhere. Dinkelman and Ranchod (2007) further support the hypothesis that informal employment is the only option of employment for vulnerable groups in South Africa.

Informal employment also predominates in the retail sector across sub-Saharan Africa. In South Africa, for example, the informal retail sector exists in townships and informal settlements. These localities exist because of apartheid policies that enforced spatial segregation and resulted in the establishment of large informal settlements outside cities where vibrant markets developed. Ligthelm (2008) argues that the township retail sector is significant with firms involved in retail trade accounting for the largest share of informal enterprises in South Africa. Ligthelm (2008) also estimates that informal retail outlets in townships accounted for 10 per cent of total retail trade in South Africa in 2003 (approximately 30 billion Rand<sup>3</sup>), 2.7 per cent of which is derived from *spaza* shops, retail businesses operated from within homes (Ligthelm 2005).

A range of retail firms operate in township economies increasing in sophistication from hawkers (street vendors) to *spaza* shops to general dealers (Ligthelm 2004). On average, township retailers employ 2.5 workers, and this average increases with the sophistication of the retail outlet. Using a national survey with a sample of 481 informal retailers in 2003, Ligthelm (2004) identified the characteristics of these three types of retail outlet. He found that the level of education of the owner correlated with the sophistication of the retail outlet, with hawkers having the lowest average levels of education and general dealers the highest. The primary motivation prior to start-up is unemployment, suggesting that most of these business owners can be viewed as *necessity entrepreneurs*. On the other hand, unemployment was less of a driving factor amongst general dealers. Furthermore, Ligthelm identified evidence of an emerging entrepreneurial culture among this group, with 35.8 per cent of general dealers stating their reason for start-up as taking over the family business.

Household enterprises or home-based enterprises (HBE) also represent an important component of informal economic activity in sub-Saharan Africa. Within the region, 40 per cent of households rely on HBEs as a source of income and these enterprises account for a significant share of non-agricultural employment (Fox and Sohnesen 2012). HBEs are also relatively common in South Africa's townships where they are considered an important source of employment and income, particularly for poorer households (Gough et al. 2003; Tipple 2005; Ligthelm 2005). The defining feature of HBEs is the location of the business activity, which, as the name suggests, occurs at the residence of the owner or business partner rather than in a commercial or industrial building or area (Tipple 2005). HBEs comprise a diversity of business activities such as retail of basic foodstuff, clothing, take-away food, mechanics, carpentry and hairdressing.

The extent to which HBEs can be studied is limited by the availability of data and the informal nature of these enterprises. Studies focusing on HBEs typically employ micro-datasets limited to specific locations and thus the extent to which their findings can be interpreted and applied to a national context is limited. Fox and Sohnesen (2012) analyse data for six African countries—Burkina Faso, Cameroon, Ghana, Mozambique, Rwanda and Uganda—and find that household enterprises are associated with an increase in consumption of between 11 per cent and 27 per cent in urban areas and as much as 32 per cent in rural areas. They conclude that 'while [non-agricultural household enterprises] may be the occupational choice of people excluded from wage income opportunities (either because of lack of education or simply lack of labour demand), they are a good income choice for many members of this group, and for their households.'

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<sup>3</sup> The current exchange rate is approximately US\$1 = R14.

Gough et al. (2003) and Tipple (2005) analyse datasets from surveys carried out in urban settlements close to major cities (including Mamelodi in Pretoria, South Africa; Madina in Accra, Ghana; three neighbourhoods in Cochabamba, Bolivia; Banyu Urip in Surabaya, Indonesia; and Bhumeehen Camp in New Delhi, India)<sup>4</sup>. Both studies found that HBEs are common in Mamelodi township where they can be found operating in approximately 40 per cent of households. Compared with the sampled urban settlements in Latin America and Asia, the frequency of HBEs across households is at least 10 percentage points higher in Mamelodi. This may point to the relative importance of such enterprises in the South African context, in terms of providing a source of employment and an avenue out of poverty. Alternatively, this difference could represent the concentration of HBEs in South African urban settlements due to the historical legacy of apartheid policy which prevented these enterprises from operate outside of the townships.

Gough et al. (2003) argue that HBEs are an important source of income generation for the vulnerable and play a vital role in poverty alleviation at the household level. In fact, HBEs were found to generate 70 per cent of total household income. Gough et al. argue further that, even though the incomes generated by HBEs are low, they can play an important role in lifting the household out of poverty. Examining a sample across four urban settlements from four countries, Tipple (2005) finds that poverty is more common amongst non-HBE households. Furthermore, HBEs can play a vital role in providing an opportunity for women to engage in economic activity since combining productive and reproductive roles is more easily done at home (Gough et al. 2003). In Mamelodi, 73 per cent of HBEs are run by women (Gough et al. 2003).

#### *Informality as a buffer to unemployment*

The second reason for the predominance of informal employment in sub-Saharan Africa relates to the key role played by this sector in absorbing labour as part of the business cycle. Under this scenario, informality provides an alternative to unemployment, particularly during economic downturns and for vulnerable groups. In fact, individuals are often better off in informal employment than in unemployment, particularly if unemployment benefits (or any other type of transfer that might 'favour' unemployment over informality) are low or non-existent. This was found to be the case in Zimbabwe in the 1990s when the number of small enterprises rose due to an economic slowdown (Daniels 2003). At the time, the informal sector grew as agricultural income declined. In addition, it has been shown across a number of East African countries that shocks to crop production result in an increase in self-employment and casual labour (Otsuka and Yamano 2006). In Senegal, the informal sector absorbed a significant proportion of the workforce that was lost from the industrial sector between 1994 and 2001 (Lindauer and Velenchik 2002). In South Africa, however, Bargain and Kwenda (2010) find that the wage gap between formal and informal employment is pro-cyclical; a relationship that appears to be confirmed by a drop in informality after the recent recession in 2009. This finding contrasts the idea that formal sector wages are less sensitive to market forces because of labour market regulations like minimum wages.

The question of the pro- or counter-cyclicity of the informal sector should perhaps not be considered relative to economic growth, but should rather be evaluated within the context of trends in formal sector employment and unemployment. This begs the questions, 'What happens to informal sector employment when formal sector employment declines in response to economic downturn?' as opposed to 'What happens to informal sector employment when output contracts?' While these questions are linked, they differ in a temporal sense; output contractions may precede or coincide with employment contractions,

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<sup>4</sup> Both Gough et al. (2003) and Tipple (2005) analyse the same survey dataset on HBEs in Mamelodi.

depending on the labour market and, as a result, counter-cyclicality with respect to economic growth may differ from counter-cyclicality with respect to unemployment, for example.

Whilst informal employment may be the only option in urban areas in the face of economic downturns, the main question that arises from the above-mentioned hypothesis is whether these workers are better off, either than the unemployed or than those who are underemployed mainly in subsistence agriculture. Evidence from sub-Saharan Africa suggests that average informal sector incomes are higher than those in subsistence agriculture (Fox and Gaal 2008), but wages are lower than those in the formal sector (ILO 2002). In addition, workers in the informal sector are more likely to have received some sort of formal training relative to those in agriculture (Sparks and Barnett 2010). Further, urban areas often provide access to apprenticeships that are not available in rural areas (Filipiak 2007). We therefore find that informal employment promotes inclusive growth by offering opportunities to interact with the economy; informal employment provides the unemployed with a source of income and, consequently, represents an instrument for poverty alleviation.

### **3.2 The impact of informality on growth and jobs in the formal sector**

Within the context of inclusive growth, there are four channels through which we consider that informality could potentially have a negative impact. First, informal sector employment does not compare favourably with formal sector employment with respect to income, benefits and security. Second, productivity in the informal sector is lower than that in the formal sector, *ceteris paribus*. Third, the informal sector represents an erosion of the tax base, while at the same time 'free-riding' on publicly provided services. Fourth, informal sector firms may have an unfair competitive advantage over formal sector firms and may therefore undermine the ability of the formal sector to grow.

#### *The informal sector offers lower income, benefits and security*

Benefits of being employed in the formal sector include higher wages, increased access to welfare and health services (if they are not universal) (ILO 2009), work stability and access to credit. There is a clear welfare and wage disparity between workers in the formal and informal sectors. According to the ILO (2009), the average wage of informal sector workers in Africa is just one-fifth of that of their public sector counterparts. Kingdon and Knight (2007) find that formal sector wages and benefits in South Africa are far greater than in the informal sector. Also in South Africa, Bargain and Kwenda (2010) estimate that informal sector employees earn 62 per cent less than formal sector workers, while the self-employed earn 30 per cent less.

Table 2 presents mean and median wages levels in the formal and informal sectors in Namibia, South Africa, Tanzania, and Zambia. The data confirms that median wages in the informal sector are significantly lower than those within the formal sector and that, within the informal sector, wages tend to be higher for non-agricultural workers. Using data for Cotonou (Benin), Dakar (Senegal) and Ouagadougou (Burkina Faso), Benjamin and Mbaye (2012) find that the formal sector wage distribution lies towards the right of that of the informal sector, implying higher wages, with the distribution for smaller informal firms to the left of that for large informal firms. They also find higher poverty rates among households whose heads are employed in the informal sector in Benin and Burkina Faso (Benjamin and Mbaye 2012). With higher incomes, formal sector workers are less likely to be poor and are better able to deal with economic shocks.

According to the ILO (2009), worker in the informal economy, particularly women, are exposed to hazardous jobs and are at high risk of accident given lack of compliance with occupational health and safety regulations. Further, access to benefits is rare in the informal sector and women without maternity leave are particularly vulnerable to health complications (ILO 2009). Recognising the role of the informal sector in providing income to low-skilled



workers in particular, it is important to note that a large number of workers in the informal sector are underemployed, while others work long hours in low-productivity activities in which earnings are extremely low.

#### *Productivity differentials*

The productivity differential between the formal and informal sector is profound. La Porta and Shleifer (2008) use data for a number of African, Latin American and Asian countries from three World Bank surveys (the Enterprise Survey, the Informal Survey, and the Micro Survey) to estimate productivity as log value added, log sales per employee and log real output per employee. They find that registered firms are typically more productive than unregistered firms; that even small registered firms are more productive than unregistered firms; and that large unregistered firms are significantly more productive than small unregistered firms. For the African countries in their sample, they find that the ratio of value added by informal firms to that by formal firms ranged from one per cent in the Democratic Republic of Congo and three per cent in Rwanda, to 10 per cent in Kenya, 14 per cent in Botswana (the median for the region) and 70 per cent in Cape Verde (La Porta and Shleifer 2014).

These productivity differentials at the micro-level are often evident at the macro-level: countries with high levels of informality typically have lower income levels. It is for this reason that the OECD (2006) argues that 'while informal enterprises may provide a short-term solution to a household's livelihood needs, creating an economy with a higher proportion of formal enterprises and jobs is important to long-term welfare creation, stability and poverty reduction'. Figure 3 presents data on the relationship between informal employment and per capita GDP in developing countries and confirms a negative correlation between informality and national income levels. This negative relationship is also found by La Porta and Shleifer (2008), using a range of measures of the informal economy, including contribution to GDP, prevalence of tax evasion and share of self-employment. Amongst the African countries included in Figure 3, countries such as Uganda, Tanzania and Zambia have high levels of informal employment and low per capita GDP. There are, though, outliers: Lesotho and Zimbabwe have somewhat lower levels of informal employment than would be expected given their per capita GDP levels. In the case of Zimbabwe, this may be related to the broader economic challenges experienced during the 2000s, while in Lesotho lower levels of informality may be related to that country's interconnectedness with the South African economy.

In terms of output, sub-Saharan Africa output per worker was found to be 13 times lower than the developed country average and one-quarter of the global average in 2007 (ILO 2009). Loayza and Rigolini (2006) find that, in the long run, informality is more common in countries that have lower GDP per capita and impose more costs on formal firms in the form of more rigid business regulations, less valuable police and justice services, and weaker monitoring of informality. Formality also helps insulate firms from corruption and improves their access to credit (Caro et al. 2010), and enables them to access other business services provided by the state, such as contract and law enforcement.

Likewise, countries with higher poverty levels tend to have higher levels of informality (Figure 4). According to the ILO (2009), women represent the main financial support for 30 per cent of the world's households and, since women are over-represented within informal sector employment, decent working conditions and remuneration have a significant role to play in broader developmental objectives related to poverty reduction and child welfare.

At least part of the productivity advantage that formal sector firms enjoy may relate to the economies of scale that they are able to achieve since they do not need to remain small to avoid detection by authorities. However, Amin and Islam (2015) find that, within the informal sector, it is not necessarily the case that size is positively correlated with productivity. Using

the World Bank's Enterprise Surveys for Angola, Botswana, Burkina Faso, Cameroon, Cape Verde, Mali and Rwanda, they find a robust negative relationship between employment and labour productivity: a one per cent increase in employment is associated with a decline in labour productivity of between 0.4 and 0.6 per cent, depending on the exact specification. This, the authors argue, 'may indicate that there may be small informal firms that do not have any incentive to grow' (Amin and Islam 2015).

#### *Erosion of tax base*

By definition, informal sector activity occurs beyond the view of authorities. The prevalence of informal activities is closely related to an environment characterised by weaknesses in three institutional areas, namely taxation, regulation and private property rights (AfDB 2013). A large informal sector uses and congests public infrastructure without contributing tax revenue to finance it. As a result, service quality and quantity is lowered, while putting upward pressure on taxes paid by the formal sector.

Within the sub-Saharan Africa region, though, it is not clear to what extent the erosion of the tax base is currently a serious concern, with relatively little research aimed at quantifying these lost revenues. One such study, by Benjamin and Mbaye (2012), estimates that collecting income tax from informal sector businesses would raise an additional 10.6 per cent of GDP in tax receipts in Benin, 4.9 per cent in Burkina Faso and 2.9 per cent in Senegal. Thus, the extent of these lost revenues is likely to vary widely across countries. The key question then is whether these are truly 'lost' revenues in the sense that they could be recovered with sufficient effort. We would argue that it is unlikely that tax authorities would be able to collect a significant proportion of these revenues, given the institutional weaknesses that plague many countries in the region, the particular complexities associated with taxing the informal sector and the social and political ramifications of trying to tax the sector. Indeed, such a tax collection effort may have significant negative effects on activity within the sector, further compromising employment and poverty outcomes. That said, these foregone revenues are a real concern in many Latin American countries, for example, where informality predominates and their example should certainly serve as a cautionary tale for policymakers who advocate for expanding the informal sector.

The flipside of the 'lost revenue' argument is that should taxes be collected from the informal sector, the onus then shifts firmly to the public sector in terms of basic service and infrastructure provision. Nevertheless, what is clear is that the presence of a large informal sector is likely to have negative implications for state capacity and the role of the state relative to what might be the case were the sector smaller.

#### *Formal-informal linkages*

The various advantages inherent in formality from the perspective of workers can often represent disadvantages from the perspective of firms, when compared to informal sector firms. Formal firms have higher wage costs and are less flexible (Almeida and Carneiro 2005). Thus, formal sector firms may face significant competition in the form of informal firms with their lower cost structures (OECD 2009). As La Porta and Shleifer (2014) note, this view of 'informal firms as parasites competing unfairly with law-abiding formal firms' implies that 'informality should be suppressed, not unleashed'.

Dinh et al. (2012) investigate binding constraints on the growth of firms in 98 developing countries using World Bank Enterprise Survey data, which includes responses from more than 39,000 firms. Firms are asked to rate 15 obstacles related to the business environment, one of which is 'practices of competitors in the informal sector'. Using a number of different models with firm-level employment growth as the dependent variable, the authors find that informal sector competition is second only to access to finance as a binding constraint: it consistently has a negative, statistically significant coefficient irrespective of the particular model or subgroup of countries (of which sub-Saharan Africa is one). Further, these results

are found to be robust when excluding foreign firms, government-owned firms or non-exporting firms. In total, 38 sub-Saharan African countries were included in this analysis, using data collected between 2006 and 2009. Of these, informal sector competition was the most cited constraint amongst firms in four countries—Cameroon (24.9 per cent of firms), Cape Verde (17.1 per cent), Niger (21.2 per cent) and Swaziland (25.4 per cent)—and as the second-most cited constraint in a further six countries (Botswana, Madagascar, Mauritania, Mauritius, Mozambique and Zambia) (Dinh et al. 2012). In Benin, Burkina Faso, Kenya, Malawi, Togo and Uganda, informal sector competition was the third-most cited constraint. Thus, firms in 16 out of 38 sub-Saharan African countries rated informal sector competition within the top three constraints.

Competitive advantages for informal firms are not, though, solely related to their ability to avoid the costs associated with formality. The success of informal retailers in South African townships, for example, is related to their close proximity to their customers; the convenience they offer in terms of longer trading hours; and their willingness to sell smaller quantities of certain items (Ligthelm 2008). Ligthelm (2005 and 2008) argues that their ability and willingness to extend credit to their customers represents a key advantage for informal township retailers: 81.7 per cent of these firms offer credit to their regular customers, few of whom would likely be able to access credit lines with formal retailers (Ligthelm 2005).

At the same time, however, there is an argument to be made that it is formal sector firms that hold the upper hand. In South Africa, for example, it is argued that the high degree of concentration of the formal sector and its reach into rural and informal urban settlements is one of the factors underlying the weakness of the informal sector. The impact of increased competition from formal sector retailers entering townships through new shopping centres on informal township retailers is analysed by Ligthelm (2008). This trend is found to be driven by rising incomes within townships and the desire of formal sector firms to tap into this market. Analysing data from a survey of 100 small informal and formal retail businesses in Soshanguve, a township near Pretoria, Ligthelm (2008) finds evidence of a declining market share for smaller and informal township retailers. Despite formal sector competition, informal retailers in South African townships exhibit a number of encouraging features. In an analysis of 360 *spaza* retailers across a number of townships in 2001, Ligthelm (2005) finds that two out of five owners would not choose a formal sector job if offered, which suggests a degree of success and permanence of their business.

Despite competition between the formal and informal sector, it is important to acknowledge the linkages between the two. Ligthelm (2004, 2005), for example, finds evidence of increasing linkages between the sectors in South Africa, evidenced by supplier relationships from formal suppliers to township retailers. This, it is argued, is the result of the recognition by formal wholesalers of the informal sector as a key channel to the township consumer (Ligthelm 2004). Similarly, Böhme and Thiele (2012) investigate formal-informal linkages in the economic capitals of six West African countries, namely Benin, Burkina Faso, Mali, Niger, Senegal, and Togo. They find that while informal goods are almost exclusively sold through informal distribution channels, the majority of household expenditure on formal goods also occurs through informal distribution channels (with spending on formal goods through informal distribution channels typically outweighing spending on formal goods through formal distribution channels by a factor of roughly two to one) (Böhme and Thiele 2012). Paralleling the South African experience, Böhme and Thiele (2012) point to the potentially negative impact of (formal) supermarkets on the livelihoods of informal households as they limit the available options.

### 3.3 Facilitating transitions from unemployment to informal employment and from informality to formality

While the focus of the previous two sections was on contextualising and conceptualising the relationship between informality and inclusive growth, this section reviews public policies and interventions that impact the transition of informal sector firms or own account workers into the formal sector. We consider two types of interventions in various contexts. Firstly, we consider the case in which policies have not had the desired outcome of increased formalisation. Secondly, we consider the case in which, instead of formalisation policies, other interventions that deal with the external constraints on micro-enterprises are used to facilitate growth and sustainability of formal sector micro-enterprises. Regulatory and institutional barriers increase the costs associated with formalisation, discouraging micro-enterprises from attempting to enter the formal economy. Furthermore, in a number of African countries certain institutions, including those that uphold property rights and facilitate access to credit, are either weak or do not exist (Benjamin and Mbaye 2014). This means that there is less benefit and a greater cost to entering the formal sector. To some extent, this explains why the informal sector is as large as it is in sub-Saharan Africa.

Spiegel (2012) examines formalisation policies that targeted Zimbabwe's small-scale informal mining sector in the 1990s. The Government of Zimbabwe took an interest in supporting small-scale miners in 1990, legalising riverbed mining in 1991 and decentralising the issuing of licences to local government. In addition, community mineral processing centres were created but there were too few relative to the amount of artisanal miners, resulting in significant backlogs. Nevertheless, income of artisanal miners rose and thus the legislative amendments were seen as a positive move by the government. Whilst there were significant positive steps made through various initiatives between 1990 and 2005, serious managerial deficits amongst the mineral processing centres persisted. In order to deal with the backlog, the government set a minimum amount of ore that could be brought to the processing centres, which essentially excluded a number of small-scale producers. Overall, the policy reform was felt to support wealthier and more organised small scale-producers. However in 2006, as inflation began to rise, the government reverted back to older policies and made riverbed gold mining illegal once again. This resulted in a number of small-scale miners that continued mining being given significant prison sentences. Thus the government went from breaking down external constraints to once again building them up, moving the emphasis from empowerment of the poor to formalisation of mining.

This case suggests that transitions to formality can be threatened by exposing the informal sector to ill-conceived (or predatory) state policies that crowd out small producers and promote the political interests of government officials rather than market efficiency. This is one example in which formalisation policies have been used to justify heavy-handed law enforcement campaigns that have resulted in insecure livelihoods for a number of small-scale producers (Spiegel 2012).

Indeed, the costs of enforcing formality may outweigh the benefits depending on the context in which the firm operates. A recent set of studies by Charman et al. (2013) and Charman et al. (2014) shed light on the impacts of public policy directed at enforcing formality within a sub-sector of South African retail firms, namely liquor retailers (known locally as *shebeens*). Four key findings emerge from this analysis. Firstly, there are a significant number of *shebeens* across all the sites investigated: of 818 micro-enterprises in the area, 117 sold liquor. Secondly, the notion of firm heterogeneity is consistent even within this sub-sector of liquor selling firms since *shebeens* were found to vary in terms of location, size in terms of volume of sales, and gender of owner by volume of sales. Thirdly, there are strong linkages not only between formal sector liquor wholesalers and *shebeens*, but also between *shebeens* and local enterprises within the township.

The final two key findings relate to the impact of enforcement on this type of informal micro-enterprise. Firstly, there is a clear discontinuity between the policy of formalising this type of enterprise and the economic reality of these firms. For instance, the spatial analysis reveals that although some *shebeens* are located along the 'high street', the majority (77 per cent) are distributed evenly across residential areas (this spatial distribution is evident across firm types)<sup>5</sup>. The implication is that despite efforts to enforce the registration and licensing of these businesses, the majority of these businesses would still be considered illegal due to their location within a residential area. However, a key component of the micro-enterprise business model in townships is that they meet localised demand from consumers within their vicinity. Therefore, enforcement would disrupt an existing economy that is tailored to its unique environment. Secondly, Charman et al. (2013) find that enforcement is not having the desired effect: only a very small share of *shebeens* (11 per cent) migrated to the formal system. The majority remained informal and have developed new strategies to better evade law enforcement. Charman et al. (2013) find that many of these entrepreneurs are poor and that their business is their livelihood. As the costs of formalising outweigh the benefits, they are left with little choice but to continue operating and incorporating the costs of evading enforcement into their business model. Charman et al. (2013) argue that the policy of formalising these informal micro-enterprises is at odds with the economic reality of high unemployment and the fact that these firms function as a key part of the economic structure of these township economies.

As evident in the cases described above, there is a substantial knowledge of the characteristics of informal micro-enterprises in township economies. The analysis by Charman and Petersen (2014) indicates that micro-enterprises are distributed evenly across townships and that they typically serve small, localised markets (Gough et al. 2003; Ligthelm 2004). However, very little is known about why these enterprises remain small and informal (Charman et al. 2013). Do they remain small and informal because they are economically constrained (e.g. access to credit) or geographically constrained? Does the nature of the business, the consumer base and the owner's motivation restrict them? Is it a combination of the above as well as other factors? From a policy standpoint, which typically focuses on 'graduating' these enterprises into the formal sector, these questions are important.

Where the informal sector is pervasive, enforcing formality becomes difficult, particularly when institutions are weak. However, there are examples of firms that move organically into the formal sector as they grow. Sonobe et al. (2011), in a study on metalworkers in Kenya, find that businesses organically move into the formal sector when they outgrow the informal sector, in part because their place of business has become too congested for them to grow. In addition, they find that being formal facilitates marketing and growth, which improves their competitive standing, given the number of small firms in this sector. They also find that as new firms enter the market, education or knowledge of the owner of the business becomes an important determinant of firm performance, as they understand management strategies and risks related to profit generation. In this case in Kenya, the government did not provide any support for the informal businesses besides a space in which to operate.

Based on a study of seven West African countries, Grimm et al. (2012) suggest that firms suffering from external constraints as opposed to internal constraints are far more likely to grow and even formalise. External constraints are linked to the external environment and include access to finance, to a fixed business location and to basic infrastructure. Internal constraints, on the other hand, have to do with the skills of those within the enterprise. External constraints are supposedly not binding and can be dealt with through various

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<sup>5</sup> This is a key finding across the broader research project on informal enterprises in townships in the Western Cape and Gauteng. See Charman and Petersen (2014).

interventions in the short term. However, survivalist firms<sup>6</sup> face both external and internal constraints and policy interventions addressing the external environment are likely to have a weaker impact on this group.

In East Africa, innovations such as M-Pesa (mobile money transfer), access to online platforms and e-services have had a positive impact on micro-enterprises. These are examples of policy interventions targeting external constraints faced by informal firms. Frederick (2014) examined the relationship between mobile money transfer and profits of micro-enterprises in Zambia and found evidence of substantial positive net marginal benefits for micro-enterprises using mobile money. Mbogo (2010) undertook an analysis of the usage of M-Pesa by micro-enterprises in Kenya, the majority of which, it was argued, were informal. It was found that the convenience of the money transfer technology, its accessibility, lower cost relative to other structures, security and usage services enhance the success and growth of micro-enterprises. While services such as these may result in a business growing and becoming more profitable, it does not necessarily mean that the business will enter into the formal sector. However, the positive impact on income suggests that businesses become more sustainable and likely to survive, thereby promoting inclusive growth.

While the case studies presented here are contextually very different, there are several lessons that can be drawn. Firstly, there is a lack of information regarding the heterogeneity of the informal sector and policy interventions do not always account for this. Survivalist enterprises require different policy interventions to firms with fewer internal constraints. Firms with internal constraints require interventions that target skills and basic managerial practices. Micro-enterprises with only external constraints require policy interventions that facilitate doing business in the firm's environment. Secondly, formalisation policies seem to favour small businesses that are more successful and in a better position to exploit such interventions. Formalisation requires that firms incur a number of costs that are often more affordable for firms that are better off. Thus, policy-makers should recognise that firms at different stages of development will formalise at different rates. Enforcing formalization may have more detrimental effects on welfare if it forces firms out of the market. Thirdly, policies need not always target formalization through regulation, as certain firms will outgrow the informal sector organically. In order to facilitate this, skills training, access to credit, a space in which to do business and a reliable energy source may allow businesses to flourish and expand into formal markets. Lastly, the scope and scale of informal micro-enterprises will continue to grow across most developing countries despite regulatory reform (Sinha and Kanbur 2012). However, Charman et al. (2013) argue that the reasons behind the growth of the informal economy and the increased emergence of micro-enterprises are poorly understood. As such, future research needs to interrogate the factors driving or facilitating entry into the informal sector, whether as an employee or as a business owner. In the following section, we explore one of these potential factors, namely the impact of a positive income shock in the form of a welfare grant on the labour market behaviour of household members.

The literature and broader evidence presented here suggest a number of key findings in terms of the relationship between the informal sector and inclusive growth. Firstly, the informal sector promotes inclusive growth through providing an alternative to unemployment when there are no alternative employment opportunities available, particularly for those with low skills as well as women and young people. Secondly, the informal sector may inhibit

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<sup>6</sup> Survivalist enterprises are low productivity enterprises that are typically not skill-intensive, do not employ additional workers and from which only survival levels of income are generated. Rogerson (1997) describes survivalist enterprises as 'a set of activities undertaken by people unable to secure regular wage employment or access to an economic sector of their choice. Generally speaking, the incomes generated from these enterprises ... usually fall short of even a minimum income standard and involve little capital investment, virtually no skills training, and only constrained opportunities for expansion into a viable business. Overall, poverty and the desperate attempt to survive are the prime defining features of these enterprises.'

inclusive growth when workers are put in precarious positions where earning benefits are outweighed by job insecurity and lack of protection. Thirdly, the informal sector is a significant economic contributor that employs large majorities of individuals in a number of sub-Saharan Africa countries. Therefore, in order to promote inclusive growth, policymakers should be careful not to create policies that push firms out of the market and as a result increase levels of household poverty. Policymakers should take into account the heterogeneity of informal sector actors. Approaches that consider more integrated markets often emphasise the relationship between informality and inclusive growth, but often 'recognise that informality is a better option than a fully formal but inflexible economy that cannot bypass the distortions and rigidities induced by a burdensome regulatory system' (Elbadawi and Loayza 2008). This may not be applicable to all countries in the region, but it does rebalance the discussion from the informality-formality dichotomy towards the recognition that unemployment is often an alternative scenario.

## 4 Informality and inclusive growth in South Africa

In this section, we turn our focus towards South Africa and aim to provide evidence relating to some of the issues raised in the previous section. In particular, we investigate the following questions in the case of South Africa. First, to what extent do formal and informal sector workers differ from each other (and from the unemployed and the economically inactive) in their observable characteristics? Is there evidence that suggests that the informal sector provides employment to individuals who are otherwise marginalised from employment and the economy generally? Second, how does informal sector employment react to changing economic conditions? Is informal sector employment pro- or counter-cyclical and what are the implications for the inclusiveness of economic growth? Third, how common are individual-level transitions into informal and formal sector employment and is there any evidence of obstacles to certain types of labour market transitions? Lastly, is there evidence suggesting that positive household income shocks, by addressing binding resource constraints, may be associated with increased informal sector participation?

### 4.1 Observable characteristics of formal and informal workers

In providing an overview of informality, we assess the extent to which those in informal employment differ from the rest of the working-age population according to their particular labour market status. Table 4 presents the distribution of a number of demographic and other covariates across six mutually exclusive labour force states—formal employee; formal self-employed; informal employee; informal self-employed; searching unemployed; and non-searching unemployed—as well as for those who are not economically active. The final column of the table gives the proportion of total employment accounted for by workers who are informally employed. The following section uses the terms 'informal employment' and 'informally employed' as including both informal employees and the informally self-employed, similar for 'formal employment' and 'formally employed'.

Overall, formal employment is much more common than informal employment in South Africa, where 34.6 per cent of the workforce engages in the informal employment. Workers are most likely to be formal employees, followed by informal employees, with 27.3 and 11.5 per cent of working-age individuals engaged in these activities respectively. Self-employment (whether formal or informal) is not common, although individuals of working age are more likely to be informally than formally self-employed.

It is clear from Table 4 that labour market status differs substantially across race groups in South Africa. Whites are more likely to be self-employed or employees in the formal sector and have the lowest overall rate of workers in informal employment (9.9 per cent). In contrast, Africans<sup>7</sup> are least likely to be employed in any type of formal employment and have the highest rate of informal employment, with 39.4 per cent of all African workers informally employed. Therefore, not only do White South Africans experience the lowest unemployment rate, they are also more likely to be engaged in employment that is typically characterised by higher wages, greater job security and better-quality work conditions. Similarly, men are more likely than women to be engaged in formal employment, with 31.0 per cent men and 38.9 per cent women in informal employment.

Educational attainment is an important indicator of labour market status: a larger proportion of those with higher attainment is in formal employment. While 45.0 per cent of workers who did not complete secondary school are informally employed, this falls to 27.9 per cent if the worker completed secondary education. Tertiary education further reduces the likelihood of informal employment and substantial differences exist between individuals with diplomas/certificates and those who have obtained a degree. While only 13.6 per cent of diploma/certificate holders are informally employed, this decreases to just 3.2 for individuals with a degree.

While the majority of youth aged 15 to 24 years are not economically active (NEA), 73.8 per cent of those youth who are working are employed informally. Informality levels are lower for all other age cohorts, indicating that youth are particularly exposed to this vulnerable form of employment. This may be due an emphasis on experience on the part of employers and an unwillingness to assume the additional risk associated with hiring individuals who are relatively 'untested' in the job market. Thus, young people may resort to informal employment as a last-resort if they find themselves unable to secure employment in the formal economy.

Unsurprisingly, formal employment is most common in urban areas. Informal employment accounts for more than half (53.3 per cent) of employment in traditional rural areas, which are characterised by communally-owned villages and suffer from poor economic opportunities due to their isolation. The incidence of informal employment is somewhat lower in commercial farming areas, but remains high at 44.2 per cent. The sector of employment is also a strong indicator of the incidence of informal employment. For example, private household workers have the highest incidence of informal employment (85.5 per cent), followed by those in construction (66.5 per cent). The mining and financial sectors have high rates of formal employment, with only 2.0 per cent and 10.2 per cent respectively of workers informally employed.

Finally, the mean and median hourly wages in formal and informal employment highlights the relative vulnerability of informal workers. Mean monthly wages are lower in both forms of informal employment, when compared with formal employment. The mean monthly wage for formal employees is R6,260 per month (just under USD450), compared with only R1,845 per month (around USD130) for informal employees. Similarly, the formally self-employed earn on average R20,237 per month (USD1,445), compared to just R1,684 (USD120) for the informally self-employed. These large wage differentials correspond with the large differentials found within the Quarterly Labour Force Survey (QLFS) data presented in Table 3.

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<sup>7</sup> The term 'black African' is used by government and Statistics South Africa, but is much less common in the economics literature. In South Africa, 'black' on its own is not equivalent to 'African' or 'black African'; rather, 'black' is equivalent to 'not White', although the latter term is not used due to racist connotations. Socio-economic analysis in South Africa continues to rely on the apartheid-era racial classifications as a means of monitoring progress in addressing historical inequalities. This classification distinguishes between African (or Black African); Coloured (individuals of mixed ethnic ancestry); Asian (or Indian/Asian); and White.' We use these latter definitions here.



These large wage differentials are echoed in differences in poverty measures by labour market status presented in Table 5. Here we calculate the standard  $P_0$  (poverty headcount) and  $P_1$  (poverty gap) measures proposed by Foster, Greer and Thorbecke (1984) for all working-age adults aged 15 to 64 years using per capita household expenditure and two poverty lines. Irrespective of the poverty line or poverty measure used, the data confirms greater poverty amongst those that are not employed (i.e. unemployed or not economically active) compared with those that are employed (either formally or informally), and greater poverty amongst those who are informally employed compared with those that are formally employed. Thus, the data confirms higher levels of deprivation amongst those with weaker connections to the labour market: using the lower-bound poverty line, between 56 and 60 per cent of working-age adults who are not employed are poor, compared to between 37 and 45 per cent of the informally employed, 17.5 per cent of formal employees and just 4.9 per cent of the formal self-employed.

Importantly, these poverty differentials provide some evidence that South Africa's unemployment insurance system is unlikely to be causing individuals to choose unemployment over, say, informal employment. This may be due in part to limitations in coverage, the relatively low benefit levels and the limited duration of benefits. In order to claim from the Unemployment Insurance Fund (UIF), workers must have accumulated sufficient credit. This means that coverage is limited to formal sector workers. Public sector workers, people who work less than 24 hours a month, and workers earning above a certain threshold are also excluded from UIF coverage. Benefits range between 38 per cent and 68 per cent of average earnings over the final six months of employment and are paid up to a maximum of 238 days over a four-year period (Department of Labour 2014).

This stark poverty ordering of labour market status does not, though, translate into an inequality ordering. In Table 6 we decompose overall labour earnings inequality according to labour market status, with labour earnings including wages and earnings from self-employment, following Lerman and Yitzhaki (1985) and Leibbrandt et al. (1996). Often this type of decomposition looks at income sources, but here we apply the decomposition to labour market status. The data reveals extremely high inequality in individual-level labour earnings, with a Gini coefficient of 0.697. This is, though, significantly higher than estimates of inequality *within* a given labour market status. Thus, for example, the Gini coefficient for informal employees' wages is 0.476 rising to 0.578 for the formal self-employed; in general, inequality amongst the self-employed is higher than amongst employees. Formal employees, though, are responsible for the lion's share of inequality in labour earnings in South Africa, accounting for 81.5 per cent of the value of the overall Gini coefficient. Informal employees and the informal self-employed account for under five per cent of total inequality.

Overall, then, the data confirms significant differences in the observable characteristics of individuals across the various different labour market statuses. Individuals who are most often formal employees are White, male, between the ages of 25 years and 54 years, have at least 12 years of education and are located in urban areas. Those that are most often formal self-employed are White, aged between 55 and 64 years, and have tertiary education. Individuals most likely to be informal employees or informal self-employed are those with primary or no education, and aged between 25 and 54 years. Those that are most likely to be unemployed, whether searching or non-searching, are African, female, with less than 12 years of education, and who are located in traditional rural areas. Informality rates are particularly high for Africans, women, those with fewer than twelve years of education, those under the age of 25 years, and those located in non-urban areas. These are all groups that experience labour market disadvantage and who typically experience higher rates of unemployment (DPRU 2013).

## 4.2 Employment and the business cycle

As discussed, one of the key mechanisms through which informality may promote inclusive growth is through the ability of the informal sector to absorb the unemployed into employment. This is particularly important in the context of cyclical changes in the labour market as employment responds to changing economic conditions. Our analysis here is constrained by two factors. First, due to a variety of reasons, there does not exist in South Africa a long-term series of employment data disaggregated by sector (formal/informal), with such data only having been systematically collected since the mid-1990s (regular, quarterly data is only available from 2008). Second, prior to the recession in early 2009, South Africa had not experienced negative real year-on-year economic growth rates in any quarter since the end of apartheid (own calculations; SARB, 2015), constraining our ability to analyse employment shifts during and after economic downturns. The current series of QLFS data goes back to 2008 and we therefore have 30 quarters of labour market data available, which begins exactly one year before the economy entered recession.

Figure 5 presents economic growth rates alongside changes in formal and informal employment in South Africa for the period since 2008. The first three panels plot employment growth for each sector—formal, informal, private households—and real GDP growth over time. The fourth panel (bottom right) plots actual employment changes in each of the three sectors for the same period. As noted, the recession that began in early 2009 was the first in the post-apartheid period and lasted throughout 2009. Despite a relatively strong rebound in growth rates during 2010, quarterly year-on-year GDP growth declined to around two per cent thereafter and has weakened further in the past 12 to 18 months.

The labour market impact of the recession in the real economy is clearly evident. Year-on-year, employment declined in each of the three sectors in the quarters during or immediately after the economic contraction. However, the data suggests that it was informal sector employment that contracted earliest: while informal sector employment was already strongly contracting in the first quarter of 2009, it was still only marginally negative in the formal sector in the following quarter. The bottom right panel confirms this, indicating that initial job losses during the recession were almost exclusively within the informal sector. In contrast, employment change in private households mimicked quite closely that in the formal sector. This is not particularly surprising given that these are primarily domestic workers who, given the wage differentials between the three sectors, are most likely to be employed by households with formal sector jobs. Despite this, informal sector employment growth recovered quickly and was positive by the second quarter of 2010. In contrast, formal sector employment only began growing again in the first quarter of 2011, while private household employment growth turned positive three quarters later.

Correlation coefficients between employment and GDP change, shown in Table 7, provide interesting insights into the movement of these variables. First, the strong link between formal sector and private household employment is confirmed by the correlation coefficient of 0.64. Second, there is only a low correlation between formal sector and informal sector employment (0.28) and no correlation between informal sector and private household employment (0.02). Third, the correlation between real GDP growth and informal sector employment growth is strong with a coefficient of 0.63, while that between real GDP growth and formal sector employment growth is relatively weak (0.28). This finding corresponds with the view that the informal sector is more flexible, as this sector reacts quickly to changing economic conditions by shedding or adding jobs rapidly. The weaker correlation for the formal sector is related to inflexibilities in the formal labour market, as firms delayed shedding labour either because of the regulatory requirements associated with retrenchments or because they prefer not to make cuts immediately. Indeed, the correlation coefficient between formal sector employment and lagged GDP growth (lagged by four quarters) is 0.62, and -0.38 for informal sector employment.

Although this data covers a relatively short period of time and includes only one period of negative economic growth, it suggests a degree of pro-cyclicality in informal sector employment in South Africa since 2008. Informal sector employment reacts swiftly to changing economic circumstances in a way that the formal sector cannot: the recession saw rapid declines in informal sector employment, while the recovery of economic growth saw rapid increases in informal sector employment. In the aftermath of economic downturns, though, it is this flexibility that may help promote more inclusive growth by getting unemployed individuals (back) into the workforce during economic recoveries more quickly.

### **4.3 Extent of labour market transitions into and out of (in)formality**

The National Income Dynamics Study (NIDS) panel enables the analysis of the extent of transitions into and out of formal and informal employment between 2008 (Wave 1) and 2012 (Wave 3).<sup>8</sup> The transition matrix provided in Table 8 presents transitions between labour market statuses and is augmented to include the overall percentage of working-age individuals in each state in 2008 and 2012 on the inside border of the matrix, with 2008 levels reported on the left and 2012 levels reported above the interior matrix. We include individuals who were between the ages of 15 and 64 years in 2008, and no restriction on age in 2012. The key constraint with transition matrices is that, although we have information on labour market status at two distinct points in time, we do not have information relating to the intervening period. This means that we are unable to detect multiple transitions during the period, which may be particularly challenging where transitions back and forth between two states may be common. As a result, the data presented are lower bound estimates of the extent of transitions in the South African labour market during the period.

Overall, the proportion of the working-age population in formal employment rose between 2008 and 2012, from 23.0 per cent to 29.9 per cent. This was accompanied by a decrease in the proportion of the working-age population in informal employment, rather than an increase in the overall level of employment in South Africa. As 2008 and 2012 can be viewed as pre- and post-recession, this indicates that the recession years may have facilitated a shift from informal to formal employment in South Africa. This is consistent with the data presented earlier in Figure 5 and is supported by Verick (2010) who found that, over a one-year period between 2008 and 2009, the informal sector accounted for 64 per cent of total job losses.

Each row in the interior matrix of Table 8 shows the proportion of individuals in each state in 2008 who found themselves in any given state in 2012. For example, the first row of the interior matrix indicates that, of all those individuals who were formal employees in 2008, 74.0 per cent were still formal employees in 2012 while 10.2 per cent were not economically active. This indicates the relative 'stickiness' of the formal employee status compared with the other states, as nearly three-quarters of those who were formal employees in 2008 were still formal employees in 2012.

Overall, both types of informal employment were more transient than formal employment between 2008 and 2012. Only 23.3 per cent and 20.1 per cent of those who were informal employees and informally self-employed in 2008 were still in these states in 2012. Of those individuals who were informal employees in 2008, 32.7 per cent were formal employees in 2012. In addition, individuals in informal employment in 2008 were more likely than those in formal employment to be searching unemployed, discouraged (non-searching unemployed) or not economically active in 2012. The transition from informal to formal self-employment

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<sup>8</sup> Ideally, labour market transitions would be analysed between 2008 and 2010 (Waves 1 and 2) and between 2010 and 2012 (Waves 2 and 3). However, due to problems related to the labour market status variable in Wave 2, a decision was taken to analyse only the 2008-2012 transitions. For more detail on this issue, see Cichello et al. (2012).

was almost unheard of at just 1.8 per cent. Instead, the informal self-employed in 2008 were more likely to transition to inactivity in 2012 than to any other status.

While 26.6 per cent of the searching unemployed in 2008 continued to actively seek work in 2012, 21.1 per cent transitioned to the formal employee state. In terms of transitions to the informal sector between 2008 and 2012, 14.8 per cent of the unemployed transitioned to informal employee while just 5.2 per cent of individuals transitioned to informal self-employment. A large proportion of the searching unemployed in 2008, however, were part of the not economically active population in 2012.

These aggregate transitions hide important variations between different groups within the population. Specifically, we present the equivalent transition matrices for Africans<sup>9</sup> (Table 9), males (Table 10) and females (Table 11); for youth (Table 12) and non-youth (Table 13)<sup>10</sup>; and for the relatively less educated (Table 14) and the relatively better educated (Table 15).

The transition matrix for Africans (Table 9) is similar to the aggregate table in terms of stickiness in the formal employee classification, with 73.3 per cent of Africans who were formal employees in 2008 remaining in this form of employment in 2012. Overall, the key difference between this table and the aggregate table is that Africans who are formally self-employed in 2008 are less likely to remain in this state in 2012 (21.8 per cent compared to 41.5 per cent on the aggregate level). The formally self-employed in 2008 are also more likely to be searching unemployed in 2012 (18.1 per cent compared with 9.9 per cent in the aggregate table).

The transition matrices by gender (Table 10 and Table 11) are similar in the extent of stickiness in the formal employee classification, with roughly three-quarters of both men and women who were formal employees in 2008 remaining in the same state four years later. There are, however, some important differences between men and women. Men are generally more likely than women to transition into the formal employee status from other statuses over the period. Thus, 36.7 per cent of male informal employees transitioned to formal employee (28.8 per cent for women), while this was true of 15.2 per cent of informal self-employed men (7.9 per cent for women) and 30.5 per cent of searching unemployed men (16.5 per cent for women). Further evidence of men being more likely to transition 'upwards' includes higher rates of transition from non-searching unemployment and economic inactivity to searching unemployment, and lower rates of transition into economic inactivity from all other statuses except formal self-employment. In contrast, women were more likely to transition 'downwards' from formal to informal self-employment (22.5 per cent of formal self-employed women compared with 15.3 per cent of their male counterparts). There is also a high degree of stickiness in female economic inactivity with three-fifths of inactive women in 2008 being inactive in 2012, while ten per cent of non-searching unemployed women in 2008 did not transition out of this state by 2012.

Interestingly, youth are more likely to transition into the formal employee state from every other labour market status than their non-youth counterparts (Table 12 and Table 13). Since youth formal employee rates were initially very low but by 2012 were very similar to non-youth rates, this suggests an equalisation of formal employee rates over the period as comparatively more young people transitioned into being formal employees. The differences are particularly large in the transitions from formal self-employment, informal self-employment, non-searching unemployment and economic inactivity. For both youth and non-youth groups, though, there is a high degree of stickiness in the formal employee state, with

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<sup>9</sup> See footnote 10 about race groups in South Africa

<sup>10</sup> Following the South African convention, we define youth here as those aged 15 to 34 years.

over 70 per cent of those who were formal employees in 2008 being formal employees in 2012. Youth are also more likely than non-youth to transition into searching unemployment from all except the formal self-employed state, and less likely to transition into economic inactivity from any status in 2008. This is likely to be primarily due to older individuals (especially those close to age 64 in 2008) retiring from the labour force between 2008 and 2012. While unemployment is higher amongst the youth, transitions from unemployment into employment—whether formal or informal—are only marginally more likely than they are for non-youth cohorts.

Lower levels of education appear to be related to poorer 'quality' transitions over the period (Table 14 and Table 15). Amongst those with at least 12 years of education, 83.9 per cent of formal employees and 61.6 per cent of the formal self-employed remained in those states four years later; however, amongst those with fewer than 12 years of education these rates were 60.9 per cent and just 9.1 per cent respectively. The latter figure suggests that higher levels of educational attainment are a *sine qua non* for success in formal self-employment over time, a finding with important implications for policies that aim to formalise informal sector enterprises. Those with fewer than twelve years of education are almost always less likely to transition from informal employment, unemployment or inactivity to formal employee than those with more education; they are also more likely to transition into economic inactivity from every state in 2008 than those with more education. Thus, for example, 59.0 per cent of the economically inactive in 2008 with less than twelve years of education remain economically inactive in 2012, compared with 35.6 per cent of those people with at least twelve years of education.

These transition matrices suggest, firstly, that transitions from searching or non-searching unemployment to informal employee or self-employment are relatively rare (less than one-fifth of the 2008 cohort in either of these statuses). Second, transitions from informality to formality do occur, but less than one-third of informal employees transition into being formal employees or self-employed over the four-year period. Third, there is virtually no evidence of formalisation amongst the informal self-employed over the period; in fact, the opposite effect appears to dominate although the sample sizes are too small to make too strong a conclusion. Nevertheless, informality does seem to serve as a stepping-stone to formal employment as these 'upward' transition rates are larger than the 'downward' transition rates from formality to informality. Finally, groups that are marginalised within South African society -women, and those with less education -appear to be constrained in their ability to make 'upward' transitions.

Getting the unemployed into formal employment would be the ideal outcome. However, the sector is clearly not able to absorb all workseekers, hence the existence of substantial unemployment. As an alternative, therefore, the evidence suggests that facilitating the transition from unemployment into informal employment will enable these individuals to engage in the labour market and potentially derive benefits from growth. What appears certain, though, is that unemployment represents isolation from the labour market and the broader economy, constraining growth from being truly inclusive.

## **4.4 Household income shocks and informal sector participation**

### **4.4.1 Background**

As noted previously, lack of access to credit may represent a binding constraint on participation within the informal sector. A lack of access to credit represents a resource constraint on individuals wanting to participate in the labour market and may operate through a number of channels. Individuals may be prevented from seeking employment due to the costs, including transport costs, associated with searching for a job. In Addis Ababa, Ethiopia, lowering transport costs for young jobseekers has been found to raise the intensity

of job searches and increase the short-run probability of finding permanent employment (Franklin 2015). Although unable to look at costs, Hinks (2008), finds for South Africa in 2002 that the unemployed who are more distant from public transport are less likely to actively seek employment, particularly in rural areas. Alternatively, this lack of resources may prevent individuals from starting their own businesses (Skinner 2005; Cichello 2005; Cichello et al. 2011).

Given that resource constraints may prevent individuals from finding employment or starting their own businesses, both of which may occur within the formal or informal sectors, it follows that relaxing this constraint may have a beneficial impact on employment. This section focuses this question on the informal sector in particular, and asks whether a positive income shock at the level of the household may increase the engagement of adult household members in the informal sector. Specifically, we examine the receipt of the state old age pension as a positive income shock at the household level.

The South African state old age pension is a non-contributory means-tested grant. The value of the grant on 1 October 2015 was R1,420 (roughly US\$101 at current exchange rates) and does not require that recipients exit the labour force. In 2012, the year that corresponds to our data, the grant was valued at R1,200 (or just under US\$86 at current exchange rates). To put this value in context, it is equivalent to roughly 24.0 per cent of GDP per capita in 2014, while in 2010 the grant value was estimated to be 75 per cent *above* the median monthly per capita income (Woolard and Leibbrandt 2010). The old age pension therefore represents a significant contribution to the income of many households, and may, therefore, be expected to have discernible impacts on a variety of household- and individual-level behaviours.

While the impact of cash transfers on labour market behaviour - specifically allocations between the formal and informal sectors - has been examined in Latin America, it is relatively unexplored in Africa. In Mexico, for example, Skoufias and Di Maro (2008) find that there was a short-run impact on labour force participation of the self-employed immediately after the implementation of a cash transfer programme. However, this effect disappeared thereafter. Ribas and Soares (2011) identified a decrease in participation in the Brazilian formal sector amongst households that benefited from the Bolsa Familia cash transfer programme. Similarly, De Brauw (2013) found that the Bolsa Familia programme resulted in workers foregoing formal sector work for informal sector work that is less stable with fewer benefits and lower remunerations. Barbosa et al. (2015) however, found that cash transfers do not affect the occupational choices of Brazilian adults among formal and informal jobs, nor do they impact on the allocation of hours across sectors. Given South Africa's extensive social welfare system, understanding labour market behaviour of its recipients and their household member serves as a useful starting point to understand entry into the informal sector.

#### **4.4.2 Data and methodology**

The regression discontinuity design (RDD) used in this section exploits the age-rule applied to pension receipt in South Africa in order to estimate the effect of pension receipt on household informality rates. This represents a fuzzy regression discontinuity design which makes use of discontinuities in the likelihood of pension receipt: before age 60, no-one receives the pension, while from age 60, the likelihood of receiving the pension is positive. This differs from a sharp regression discontinuity in that not all household members over the age of 60 receive the pension, i.e. the probability of pension receipt is not 1 after age 60. Figure 6 illustrates this by presenting individual and household access rates to the old age pension for 2014 by age of the individual and age of the oldest household member respectively. Access rates to the old age pension are zero up to age 59, rising to 44.8 per cent of individuals and 46.5 per cent of households at age 60.

In order to assess the effect of pension receipt on household informality rates, the discontinuity in the probability of pension receipt before and after age 60 becomes the instrumental variable for pension receipt. The relationship between pension receipt and age is evaluated in the first stage of the model. In the simplest case, the only excluded instrument is a dummy variable indicating the presence of someone aged 60 or above in the household, given in the equation below:

$$E[Pension Receipt_h | Age_h] = \beta_0 + \gamma_1 Age_h + \gamma_2 Age_h^2 + \dots + \gamma_p Age_h^p + \pi AgeDummy_h + \varepsilon_{h1}$$

where  $E[Pension Receipt_h | Age_h]$  is the expected value of pension receipt given the age of the oldest household member and  $\pi$  is the first-stage effect of  $AgeDummy_h$ , the dummy variable equal to one if the oldest household member is 60 or older.

The predicted value of pension receipt is then used as an explanatory variable in the second stage of the model, resulting in the fuzzy regression discontinuity reduced form:

$$\gamma_h = \mu + \delta_1 Age_h + \delta_2 Age_h^2 + \dots + \delta_p Age_h^p + \rho \pi AgeDummy_h + \varepsilon_{h1}$$

Where  $\mu = \alpha + \rho \beta_0$  and  $\delta_j = \beta_j + \rho \gamma_j$  for  $j=1, 2, \dots, p$ .

We use both the nonparametric and parametric methods of approximating the pension effect on household informality rates. The non-parametric kernel method uses local linear regression, estimating the model in a given bandwidth around the cut-off age of 60. We used both the optimal and double optimal bandwidth indicated in the Imbens-Kalyanaraman optimal bandwidth procedure<sup>11</sup>. We also used parametric regression, including six different polynomial functional forms: linear, linear flexible, quadratic, quadratic flexible, cubic and cubic flexible, with flexible models allowing the slope on either side of the age cut-off to be different. We do not, however, restrict the bandwidth in these models.

Overall, we utilise three different explanatory variables in our discontinuity regression analysis, all providing different indicators of the rate of informal sector employment within the household:

- 1) Type 1 Informality: The proportion of working-aged household members who are employed in the informal sector.
- 2) Type 2 Informality: The proportion of working-age employed household members who are employed in the informal sector.
- 3) Type 3 Informality: The proportion of working-age non-formally employed (i.e. not economically active, unemployed and informally employed) household members who are employed in the informal sector.

The data we use is from the 2012 General Household Survey (GHS), a nationally representative household survey published by Statistics South Africa. This is one of the few recent official datasets that includes both a proper labour market module and data on household members' receipt of grants. Since this survey focuses on living standards and welfare issues, it has the added advantage of variables relating to living conditions and asset ownership.

We limit our sample to households headed by Africans or Coloureds. The key reason for this is that, although the pension is means-tested, the means test is applied on the basis of both own and spousal income as well as value of assets and, unfortunately, we are unable to replicate the test accurately with the available data. Limiting the sample to African- and Coloured-headed households, which are also the groups with the lowest mean incomes in

<sup>11</sup> See Imbens and Kalyanaraman (2011).

South Africa, combined with the fact that the old age pension is near universal amongst these groups means that our restricted sample is unlikely to include significant numbers of households that are ineligible for the pension.

#### 4.4.3 Tests

The implementation of the RDD requires a number of tests in order for the design to be validated. Given space constraints, we do not report the detail of the results of all of these tests, but provide an overview below:

**Continuity of the forcing variable:** In order for the RDD to be valid, the forcing variable (age of the oldest member of the household) must be continuous through the cut-off (60 years, the age of pension eligibility). The null hypothesis of no discontinuity at the cut-off is not rejected for our sample, indicating that there is no manipulation of the forcing variable (discontinuity estimate 0.0538, standard error 0.04369). This can be confirmed visually in Figure 7.

**Balanced covariates:** The next set of tests determines whether there are any breaks in the covariates at the cut-off. To do this, we calculate the mean value of each covariate within  $n$  intervals of the forcing variable, plot these against the forcing variable and, using a lowess line, inspect for discontinuities at the cut-off (Figure 8). None of the selected covariates displays significant discontinuities at age 60. Following Lee and Lemieux (2010) we run a Seemingly Unrelated Regression (SUR) using various functional forms (discussed above) to test whether the data are consistent with no discontinuities for any of the observed covariates. The data, though, fails this test for all functional forms except for the flexible quadratic form.

**Discontinuity in the outcome variable:** In the same way that we test for the continuity of the forcing variable, we test for discontinuity in the outcome variables (Figure 9). Unfortunately, the results do not provide strong evidence of discontinuity in the outcome variables. In the case of our second outcome variable - the informality rate of employed household members - there is a slight discontinuity. This weakness in the discontinuity suggests that the RDD is unlikely to yield compelling evidence of an effect of the old age pension on informality.

#### 4.4.4 Results

The results of the non-parametric analyses for the three dependent variables are presented in Table 16, Table 17 and Table 18, while the corresponding parametric analyses are presented in Table 19, Table 20 and Table 21. Unsurprisingly, given the weakness of the discontinuities observed in the dependent variables, there is little evidence of an impact of the old age pension on informality. For the non-parametric estimates, the coefficients on the old age pension variable are consistently statistically insignificant and are often negative. This negative sign contradicts our *a priori* assumption of a positive coefficient: relaxing the resource constraint, we argued, should boost engagement in the informal sector. Similarly, the parametric estimates yield few statistically significant and correctly signed coefficients using two stage least squares: the linear specification typically yields statistically significant coefficients, but it is only for the second informality measure (the informality rate of employed household members) that a positive statistically significant coefficient is observed.

Table 16 presents the results for the non-parametric analysis, with the dependent variable the proportion of working-age individuals in the informal sector. We focus on the results from the two-stage least-squares (2SLS) estimation, which are consistent with the ordinary least squares (OLS) estimation. Overall, examining the coefficient on the Living Standards Measure (LSM) category variable (a higher LSM category denotes higher living standards),



we find a statistically significant coefficient for both optimal and double optimal bandwidth on our informality measure. The coefficients are negative but small. This suggests that members of better-off households are less likely to enter the informal sector. The traditional rural area coefficient for the double optimal bandwidth specification is also found to be statistically significant, suggesting a negative effect on informality rates for those in traditional rural areas, which are typically relatively isolated from the mainstream economy.

Table 17 presents the results for the non-parametric analysis on informality defined as the informality rate of employed household members (measure II). The sample is smaller at just 615 households but the estimation yields a bigger R-squared. Similarly to the previous finding, the coefficient on the LSM category is statistically significant and negative for both the optimal and double optimal bandwidth specifications. Mean years of education is also significant and negative correlated with informality in both specifications, suggesting that the better educated are less likely to be employed in the informal sector. For both variables related to the number of children in a household, we find statistically significant negative coefficients. This suggests that households with more children under 15 years are less likely to be employed informally. The coefficient on the per capita number of mobiles in a household is statistically significant and positive for both specifications. However, the coefficient on the variable related to internet in a household is statistically significant and negative for both specifications. This result is to be expected as internet access at a household level is to some extent an indicator of wealth: households that are wealthier and have access to internet have lower rates of informality.

In terms of the estimation based on the third measure of informality - the informality rate amongst adult household members who are not employed in the formal sector - we find three negative weakly significant coefficients: the LSM category, household access to other grants, and residence in a traditional rural area.

In terms of the parametric analysis for the first informality measure (Table 19), similarly to the previous results, the coefficient on the LSM category, running water in the household, access to internet and location in traditional rural area variables, are strongly significant and negative for all six specifications. For access to other grants, we also find a strongly significant negative coefficient for all specifications. This suggests that households that receive other grants have lower informality rates. The coefficient on the mean years of education variable is positive which is contrary to previous results, although the coefficients are small.

Using the second measure of informality as the dependent variable (Table 20), we find negative statistically significant coefficients on the a number of variables including the age of the oldest household member (Oldest Age), LSM category, access to other grants, mean years of education, running water in the household, household access to the internet, location in a traditional rural or commercial agriculture area. It is not surprising that wealthier (indicative from internet access and running water) and better educated households have lower informality rates. This estimation also yields a strongly positive coefficient on the variable related to the mean number of mobiles in a household.

Overall, then, there is some degree of consistency in the results beyond the insignificance of the old age pension variable. Informality measured according to any of our three definitions is typically negatively associated with proxies for wealth or living standards. Thus, the coefficients on the LSM category, access to running water and access to the internet are typically negative and often statistically significant. Similarly, the presence of more children within the household is often negatively correlated with our measures of informality, as is location in a rural area (whether traditional rural area or commercial agricultural area).

Given the fact that the underlying assumptions for a valid RDD are not fully met, these results must be treated as tentative. Nevertheless, we believe this to be an interesting area

for further, more in-depth research. One of the key constraints in conducting this analysis has been our inability to control for some of the dynamic effects of pension receipt, particularly insofar as it may impact on household formation. Thus, for example, we know that the old age pension may attract new household members, particularly unemployed youth (Klasen and Woolard 2009), and that the pension may finance out-migration for the purposes of job search (Posel et al. 2006). It may, therefore, be worthwhile trying to explore this issue further using a panel dataset in which we are able to exploit the panel to control for some of these compositional effects. The NIDS data is one option, but it can unfortunately only distinguish formal and informal employment, rather than formal sector and informal sector employment.

## 5 Discussion

The case study on the characteristics and transitions within South Africa's labour market presents a few distinct trends, often in direct contrast to the findings presented in relation to the broader sub-Saharan Africa region. Although we do not have data on labour market transitions in the sub-Saharan Africa region, there are noticeable differences that play a key role in the relationship between informality and its impact on inclusive growth.

Firstly, the transition from unemployment to the informal sector seems far more prevalent in the sub-Saharan Africa region than in South Africa. Low-income countries in Africa are synonymous with underemployment rather than unemployment (Golub and Hayat, 2010), suggesting that there is a natural progression for individuals to move from an unemployed state into informal employment. In addition, the informal sector in sub-Saharan Africa plays a significant commercial role and is linked to the formal sector rather than competing against it, while weak enforcement of the tax regime means that there are few differences between the formal and the informal sector (Gelb 2009). South Africa's relatively small informal sector does not command significant labour market transitions. In part, this is because of the localised nature of informal activity given the spatial segregation that characterises South African cities.

Secondly, South Africa stands out as having a larger labour market component of informal employment in the formal sector, rather than informal sector employment. This is inconsistent with the aggregate figures outlined earlier on regarding informality in the sub-Saharan Africa region where more than half of the informally employed are found in the informal sector and a far lower proportion of individuals are informally employed outside of the informal sector. We find that the transition into informal employment is a symptom of non-compliance in what is typically viewed as the formal sector. Non-compliance is a common feature across the region; however, the consequences of regulations and rights not being upheld are different in South Africa relative to the region. In sub-Saharan Africa, non-compliance has led to a large informal sector whilst in South Africa, non-compliance has led to a large number of individuals employed in the formal sector without certain non-wage benefits. Whilst the latter is probably true for the region, it is certainly not the most pervasive form of informal employment. As such, unemployed South Africans are far more likely to transition into formal employment, informal employment or economic inactivity, compared with transitioning into informal self-employment. This suggests that unemployed South Africans are more likely to accept 'vulnerable' employment in the mainstream economy, instead of starting a micro-enterprise. One may argue that starting a micro-enterprise in the current South African economic climate is a form of equally vulnerable employment.

Thirdly, whilst we find that almost one-third (32.7 per cent) of individuals transitioned from the informal employee to formal employee labour market states, we find virtually none transitioning from informal to formal self-employment. The transition from informal to formal employee may be an outcome of better compliance by firms due to greater resources

dedicated to enforcement by the state or a stricter penalty structure. The lack of transitions from informal to formal self-employment seems to suggest that informal enterprises in South Africa are survivalist in nature, suffering from both internal and external constraints (Grimm et al. 2012). In terms of internal constraints, those that are informally employed are more likely to have no education or just primary education. In terms of external constraints, South Africa's informal sector was severely impacted by the recession and a number of jobs were lost. Access to credit and, more recently, a reliable source of energy have also presented challenges to expansion within the informal sector. However, relative to sub-Saharan Africa, Southern Africa is found to have better enforcement of laws, access to credit and energy supply, which means that firms face fewer external constraints and are more likely to start off as formal enterprises (Gelb 2009). Importantly, though, the transition matrices indicate extremely poor outcomes for the formal self-employed who do not have at least twelve years of education. Additional constraints in enhancing the size of an enterprise, whether formal or informal, include the concentrated nature of the formal sector that restricts competition.

The main research question behind this study asks whether the informal sector constrains or promotes inclusive growth. In South Africa, whilst the informal sector provides an alternative to unemployment for low-skilled individuals, it is too small and localised to successfully absorb the bulk of the unemployed. We do, however, find that the transition from informal to formal employment promotes inclusive growth. Despite this, the evidence related to employment and GDP growth rates confirms that informal sector employment growth rates recovered more rapidly than formal sector employment growth, absorbing the unemployed into employment more rapidly than would have been the case otherwise. This flexibility evidenced in the post-recession expansion of informal sector employment also implies a greater variability in employment levels as employment contracted sharply at the time of the recession. As a result, households that are unable to diversify their income sources away from sole reliance on the informal sector remain extremely vulnerable to labour market shocks of this nature. This is particularly true in the absence of automatic stabilisers such as a broad-based unemployment insurance system.

Given South Africa's unemployment rate, the transition between unemployment and either formal or informal employment are positive for inclusive growth. This is particularly true since we see a significant number of individuals transition from unemployment into economic inactivity, which isolates them from any positive outcomes of inclusive growth. Informal employment, whilst less secure, and informal sector employment, whilst of a fairly small scale, both contribute positively to household income. In turn, this improves household welfare as measured by money-metric poverty. Further, based on our decomposition of the Gini coefficient by labour market status, the transition from unemployment to informality has a beneficial (although small) impact on inequality. With formal employees accounting for an overwhelming proportion of total inequality as measured by the Gini coefficient, it is clear that informality, in the absence of significant increases in mean earnings in that sector, is unlikely to play a significant role in reducing inequality. However, this latter finding is tied to South Africa's specific context as a country with massive unemployment; as such, it is unlikely to hold true in countries where unemployment is rare and informality dominates. Importantly, though, the extent to which the informal sector promotes inclusive growth will depend on the extent to which a micro-enterprise can overcome both external and internal constraints. We discuss options for policymakers in terms of doing away with these constraints in the section that follows.

Finally, we do not find any compelling evidence that the old age pension contributes to facilitating entry of working-age household members into informal sector employment. This is not to say that positive income shocks do not positively contribute to informal sector activity in South Africa, since it is quite possible that the effect is not detectable due to the impact of grant income on household composition. This is an area for future research: accounting for

the dynamic impact of additional income on household structure is important in the context of evidence that grants may facilitate labour market interactions by financing migration to urban areas (Posel et al. 2006).

## 6 Conclusion and policy recommendations

The relationship between informality and the inclusiveness of economic growth is complex and varies in different contexts. The issue is further complicated when one considers that there are really two alternatives to informality—formality and unemployment—rather than simply formality. It is this switch in thinking that frames the question of informality and the informal sector in a somewhat more balanced light. As expected at the outset, though, there is no simple answer to the question of whether informality promotes or constrains inclusive growth.

Based on the regional evidence synthesis and the case study on South Africa we have provided a detailed analysis of the relationship between informality and inclusive growth and point to a few key findings that lead to the policy recommendations discussed below. Firstly, we find that the informal sector promotes inclusive growth through providing an alternative to unemployment when there are no alternative employment opportunities available, particularly for those with low skills as well as women and young people. This is true for sub-Saharan Africa broadly, as well as for South Africa. In terms of our measures of inclusive growth, the unemployment-informality transition reduces poverty, but is unlikely to have much effect on inequality in a high-unemployment society such as South Africa. Given the important role that the informal sector plays in providing employment opportunities for the vulnerable, policymakers need to approach this sector carefully in order to promote inclusivity. In particular, it is imperative to understand why individuals remain in the informal sector. Often, in the sub-Saharan Africa region as well as in South Africa, informality is the only available opportunity for engaging in the economy. A lack of employment opportunities for low-skilled workers, particularly for those that have migrated from rural areas, results in large urban informal sectors. A number of countries in Africa have failed to diversify their manufacturing base and remain dependent on sectors that do not necessarily create significant employment. Given the inability of the formal economy to absorb labour, the informal sector should be viewed in a positive light by policymakers as it provides opportunities for employment and entrepreneurship, which are preferable to unemployment.

However, in South Africa we find that transitions from searching or non-searching unemployment to informal sector employment are relatively rare. In addition, we find that women and those with less education are far less likely to transition upwards and therefore the informal sector plays a key role as an employer of vulnerable groups in society. One particular finding was that those who have less than twelve years of education and are formally self-employed are more likely to transition downwards than upwards. Furthermore, very few remain in formal self-employment by the end of the period when compared with their counterparts with at least twelve years of education, most likely due to internal constraints. Thus there are two specific challenges that policymakers should address: the overarching skills gap, specifically in entrepreneurship and practical business management; and the failure of female-run micro-enterprises to progress. Skills constraints are often an outcome of poor quality schooling, which is prevalent for the majority of households at the lower end of the income distribution. Therefore, there is a larger issue at stake for policymakers to deal with regarding the infrastructure and quality of teaching in schools. Schooling should also be used as a tool to empower young women who may want to become entrepreneurs instead of transitioning from school to a traditional formal sector type job. In addition, specifically targeted incentives and business incubators should be used to support female-run micro-enterprises.

Secondly, we find that formal sector workers are better off than informal sector workers. The informal sector may therefore inhibit inclusive growth when workers find themselves in precarious positions where earning benefits are outweighed by job insecurity and other potential negative impacts associated with informal employment. In South Africa, we find that only one-third of informal employees transitioned into formal employment over the four-year period examined. In addition, there is virtually no evidence of formalisation amongst the informal self-employed over the period. Nevertheless, informality does seem to serve as a stepping-stone to formal employment as these 'upward' transition rates are larger than the 'downward' transition rates from formality to informality. Lastly, we do not find any compelling evidence that the old age pension contributes to facilitating entry of other household members into informal sector employment.

For those informal sector enterprises that are larger and more profitable, policymakers should aim to promote their growth so that they join the formal sector more organically. The evidence suggests that policies that are supportive of informal sector firms and that encourage their growth are more likely to lead to transitions to formality. This typically requires providing access to basic services such as electricity and water, as well as suitable space for their activities. In addition, information and communication technology (ICT) should be made accessible for broader communities including those in rural areas, although this requires prices to be more competitive. As has been found in West Africa, if informal businesses are given a space in which they can operate and grow, some transition into the formal sector and begin to compete in higher value products. This is preferable to enforcing legislation that penalises micro-enterprises, with those unable to afford the costs of compliance being forced out of the market. While such policies may reduce informality in the short run, they certainly have a negative impact on welfare and isolate individuals from the potential benefits of economic growth. In addition, firms that are better off are more likely to contribute to the economy, either through moving into the formal sector and contributing to the tax base or by providing a service at a fair price that promotes the welfare of consumers.

In many countries, informal sector firms choose to be informal to avoid taxes and other costs related to formality. Whilst evidence suggests that incorporating these businesses into the tax base would not necessarily contribute a significant amount of revenue (relative to GDP), the larger challenge is institutional in that, at present, few governments have the capacity to enforce compliance with tax legislation. This underlines the numerous broader institutional challenges that policymakers have to address.

Finally, the flexibility that characterises the informal sector may have a positive role in promoting inclusive growth in the aftermath of economic contractions. The evidence from South Africa indicates that, although informal sector employment contracted during the recession in 2009, it rebounded to growth far sooner than either formal sector employment or employment in private households. This meant that the unemployed were absorbed into employment more rapidly than would have been the case in the absence of the informal sector. However, it also means that households that are reliant on the informal sector for income are vulnerable to employment shocks, particularly given the weak coverage of these workers by unemployment programmes.

In general, South African policies aimed at formalisation of informal activities have not been particularly successful and are often counter-productive to inclusive growth outcomes. It is imperative that such policies are designed in a way that supports the vulnerable, including aspects such as skills development, provision of appropriate operating spaces, a straightforward and simple process of business registration, and incentive schemes. This is preferred to a heavy-handed approach that penalises firms operating informally because they cannot afford to formalise, given the numerous internal constraints faced. Given the clear benefits of formality over informality for workers, high-unemployment countries should not simply try to steer their economies towards greater informality without implementing

programmes that improve the likelihood of firms transitioning from informality to formality. Such programmes would need to address at least two binding constraints on formalisation: first, they should aim to reduce barriers to formalisation, making it easier for firms to transition into the formal sector; and second, they should overcome the reluctance of informal firms to formalise by clearly and consistently demonstrating that the formalisation process provides substantial benefits for both the firms and their workers.

In summary, then, informality has both positive and negative implications for inclusive growth, depending on a variety of factors. Perhaps one of the key considerations for policymakers in this area is the extent and importance of heterogeneity of firms and individuals active within the informal sector. Without due consideration of this fact, policies aimed at promoting formality may reinforce existing inequalities within the economy by excluding those who would stand to benefit most from a more inclusive growth path.

# Appendix A: Figures and tables

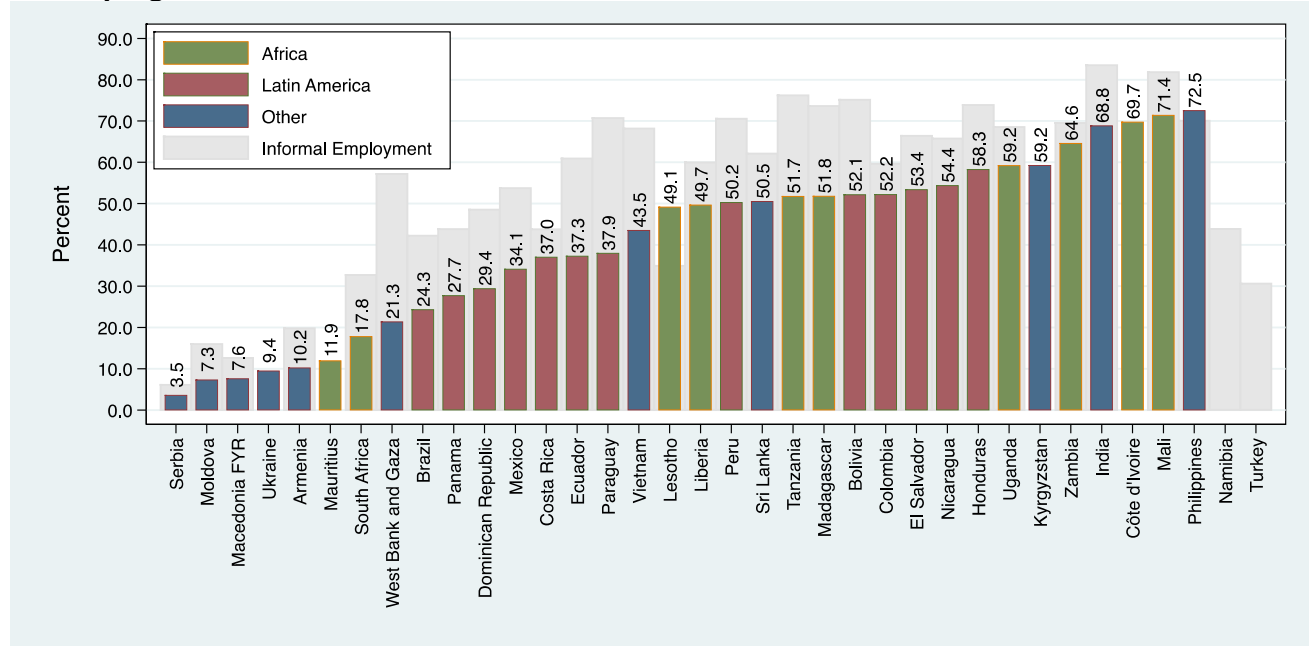
**Table 1: Defining informality in sub-Saharan Africa**

	Botswana	Lesotho	Namibia	Nigeria	Malawi	Rwanda	South Africa	Tanzania	Uganda	Zambia	Zimbabwe
	IS	IS	IS+IE	IS	IS+IE	IS+IE	IS+IE	IS	IS+IE	IS+IE	IS+IE
<b>Informal sector</b>											
Legal status	x	x						x			
Registration	x		x	x	x	x	x		x	x	x
Accounts	x	x						x			
Size	x		x				x				
Perception			x								
Household		x						x	x		
<b>Informal employment</b>											
Social security			x		x				x	x	
Paid leave					x	x			x	x	x
Sick leave					x				x		x
Pension			x		x	x	x				x
Medical aid			x		x	x	x				
Contract							x				x
Maternity leave											x
Tax					x						

Source: Botswana CSO (2009); Uganda Bureau Of Statistics (2013); Lesotho Bureau of Statistics (2013); Namibia Statistics Agency (2015); Nigeria National Bureau of Statistics (2010); Malawi National Statistics Office (2014); Tanzania National Bureau of Statistics (2007); Zim Stat (2015); Central Statistical Office (2013); Statistics South Africa(2008).

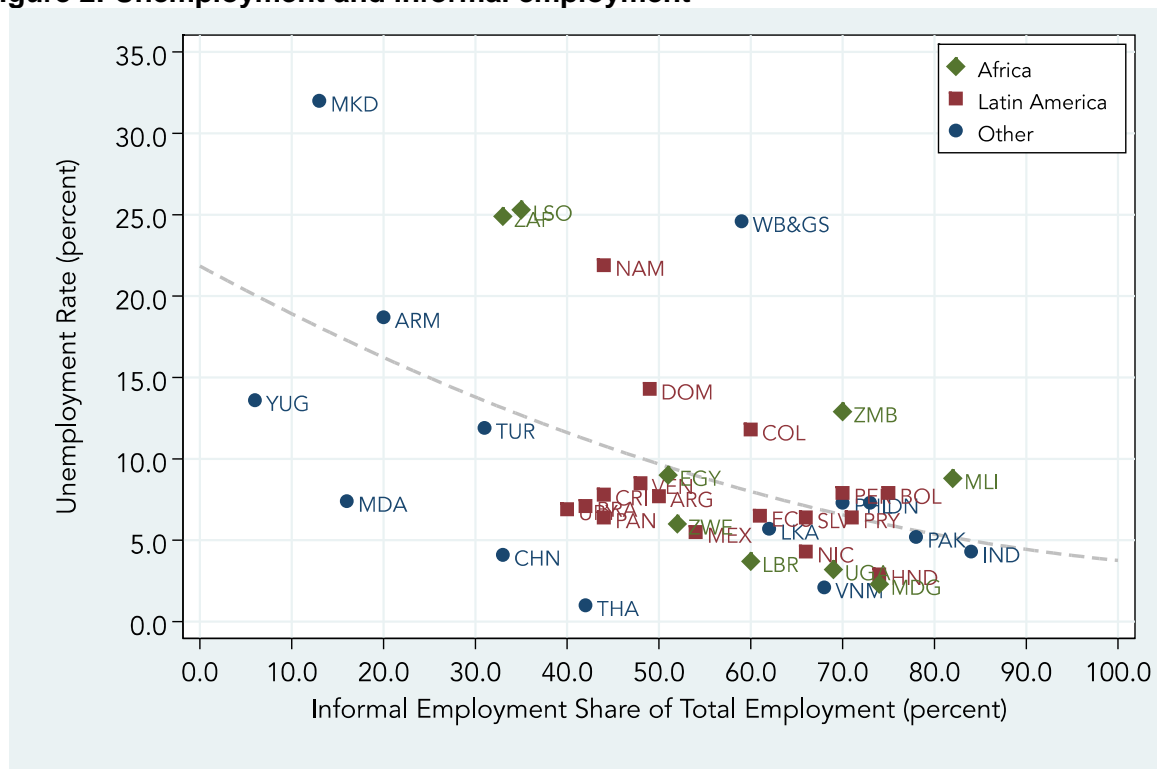
Notes: 1. 'Legal status' refers to whether an enterprise is incorporated (i.e. separate to owner). Unincorporated enterprises are deemed informal. 2. 'Registration' refers to whether an enterprise is registered with government institution. 3. 'Accounts' refer to whether an enterprise keeps a complete set of accounts separate to that of the owners. An enterprise is deemed informal if it does not keep a set of accounts. 4. 'Size' refers to the number of employees/workers in the enterprise. Exceeding a minimum threshold classifies an enterprise as formal. 5. 'Perception' refers to whether an enterprise owner perceives his/her business to be formal or informal. 6. 'Household' refers to household enterprises being deemed informal. 7. 'Social security' refers to whether an employee receives social security benefits. 8. 'Paid leave' refers to whether an employee receives paid leave. 9. 'Sick leave' refers to whether an employee receives paid sick leave. 10. 'Pension' refers to whether an employee receives pension contributions from his/her employer. 11. 'Medical aid' refers to whether an employee receives medical aid contributions from his/her employer. 12. 'Contract' refers to whether an employee is employed under a written employment contract. 13. 'Maternity' refers to whether an employee receives paid maternity leave. 14. 'Tax' refers to whether an employee has income tax deducted from his/her income. 14. IS = only informal sector measure; IS+IE = informal sector and informal employment measure.

**Figure 1: Informal sector employment as share of non-agricultural employment in developing countries**



Source: Own calculations, ILO (2015).

**Figure 2: Unemployment and informal employment**



Source: Own calculations, ILOSTAT (2015)



**Table 2: Ratio of wages to public sector wages in selected southern and eastern African countries**

	Namibia		South Africa		Tanzania		Zambia	
	Mean	Media n	Mean	Media n	Mean	Media n	Mean	Media n
<b>Informal</b>								
Agricultural	0.1829	0.3478	0.1944	0.1905	0.2219	0.1000	0.2529	0.1973
Non-Agricultural	0.2787	0.4348	0.6125	0.3438	0.1962	0.2198	0.3250	0.2133
<b>Formal</b>								
Private	1.6975	2.6087	0.9199	0.6032	0.3931	0.4167	0.7057	0.4265
Private Households	0.1648	0.3043	0.1771	0.2222				

Source: Labour Force Survey (2012) for Namibia; Labour Market Dynamics Survey (2014) for South Africa; Labour force Survey (2012) for Zambia and Integrated Labour Force Survey (2006) for Tanzania.

Notes: All estimates are for the employed population between 15 and 65 years.

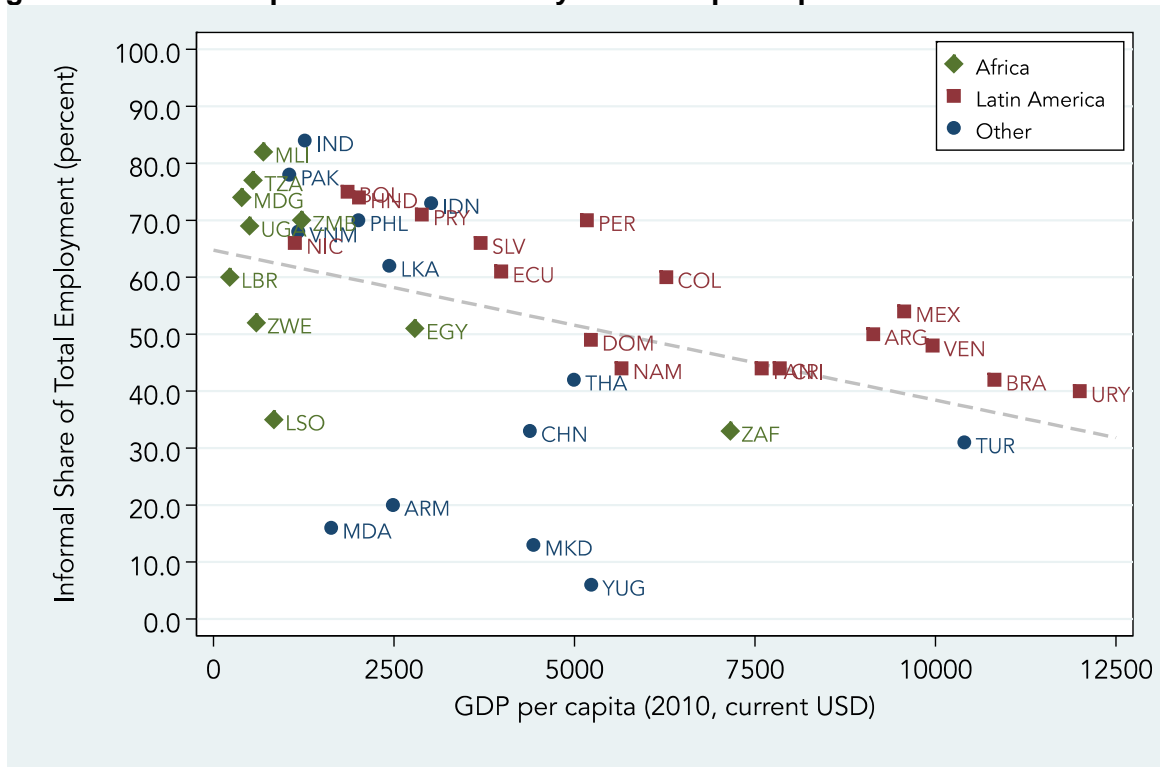
**Table 3: Formal and informal sector workers' wages and access to benefits, South Africa, 2015**

	Formal <i>Per cent</i>	Informal <i>Per cent</i>	Private Households <i>Per cent</i>	Statistically Significant Differences		
				Formal vs. Informal	Informal vs. Private HHs	Formal vs. Private HHs
<b>Contracts</b>						
Limited duration	15.1	7.8	5.2	*	*	*
Permanent	66.5	10.1	25.8	*	*	*
Unspecified duration	12.4	24.6	68.4	*	*	*
Written contract	87.0	17.0	20.4	*	*	*
<b>Employer Contributions</b>						
Medical aid	35.6	0.3	0.6	*		*
Unemployment insurance	65.0	10.2	22.1	*	*	*
Pension	54.7	2.3	4.5	*	*	*
<b>Leave Entitlements</b>						
Paid annual leave	69.5	8.5	21.5	*	*	*
Paid sick leave	73.4	11.0	25.4	*	*	*
Paid maternity leave	64.4	7.3	12.1	*	*	*
<b>Hours of Work</b>						
0-19 hours	2.1	7.7	15.5	*	*	*
20-39 hours	7.7	16.9	29.4	*	*	*
40-44 hours	45.3	16.7	30.6	*	*	*
45-49 hours	26.9	16.5	12.8	*	*	*
50+ hours	18.0	42.1	11.7	*	*	*
<b>Union Membership</b>						
Unionisation rate	32.6	1.2	0.4	*	*	*
<b>Incomes (Rands)</b>						
Mean monthly wage	10 502	6 645	1 983	†	*	*
Mean hourly wage	252.42	157.43	84.20	*	*	*
Median monthly wage	3 800	2 000	1 300	n.a.	n.a.	n.a.
Median hourly wage	86.67	47.92	42.86	n.a.	n.a.	n.a.

Source: Own calculations, QLFS 2015Q2.

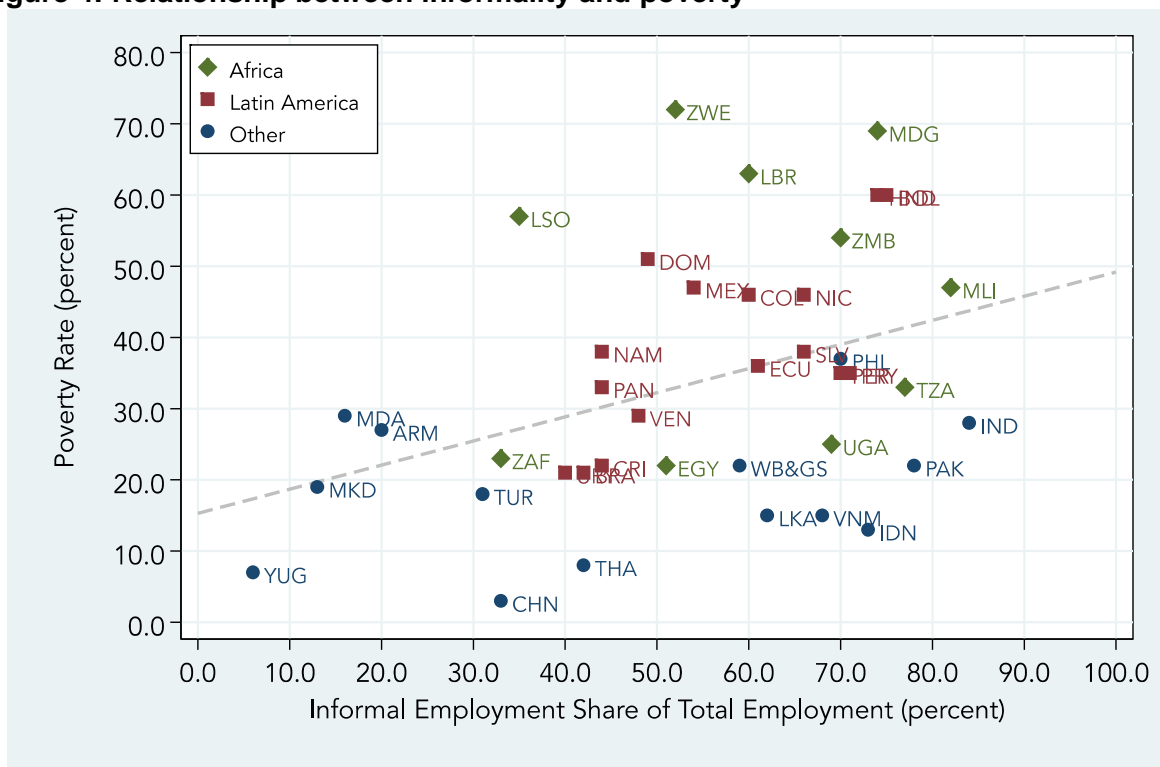
Notes: An asterisk (\*) signifies statistically significant differences at the 95 per cent level of confidence. A dagger (†) signifies statistically significant differences at the 90 per cent level of confidence. The current exchange rate is approximately US\$1 = R14.

**Figure 3: Relationship between informality and GDP per capita**



Source: Own calculations, ILOSTAT (2015)

**Figure 4: Relationship between informality and poverty**



Source: Own calculations, ILOSTAT (2015)

**Table 4: Formal and informal employment by individual characteristics, South Africa, 2012**

	Employed				Unemployed (Searching)	Unemployed (Non-searching)	Not economically active	Informal share of employment
	Formal Employee	Formal Self-employed	Informal Employee	Informal Self-employed				
<b>TOTAL</b>	<b>27.3</b>	<b>1.3</b>	<b>11.5</b>	<b>3.6</b>	<b>14.8</b>	<b>2.5</b>	<b>39.1</b>	<b>34.6</b>
<b>Race</b>								
African	24.4	0.4	12.1	3.9	16.5	2.3	40.4	39.4
Coloured	32.5	1.0	14.1	1.1	10.2	4.6	36.6	31.2
Asian/Indian	33.4	1.8	7.7	4.1	9.2	3.5	40.3	25.1
White	47.9	10.0	4.0	2.4	4.8	2.3	28.6	9.9
<b>Gender</b>								
Male	34.4	1.9	12.2	4.0	13.8	1.8	32.0	31.0
Female	21.4	0.8	10.9	3.2	15.7	3.1	45.0	38.9
<b>Education Level</b>								
None	8.1	0.0	18.2	4.1	8.0	2.9	58.9	73.8
Primary	16.3	0.3	14.7	4.8	13.0	2.7	48.2	54.2
Incomplete secondary	18.2	0.5	11.9	3.3	15.8	3.3	47.2	45.0
Complete secondary	37.6	0.8	11.3	3.6	17.2	2.2	27.4	27.9
Post-secondary	59.0	2.2	6.1	3.5	15.6	0.5	13.2	13.6
Tertiary	65.8	17.4	2.2	0.5	5.8	0.1	8.2	3.2
<b>Age</b>								
15-24 years	6.6	0.3	6.2	1.0	14.9	3.1	67.8	51.1
25-34 years	36.2	0.9	14.1	3.8	21.8	1.6	21.7	32.6
35-44 years	41.4	1.5	15.9	4.9	15.2	3.3	18.0	32.7
45-54 years	37.6	1.1	13.3	6.2	9.2	2.8	30.1	33.6
55-64 years	18.8	5.4	7.8	3.7	3.6	1.3	59.7	32.5
<b>Location</b>								
Urban areas	34.8	1.9	11.2	3.4	14.3	2.5	31.9	28.6
Traditional rural areas	12.7	0.4	10.8	3.9	16.7	2.9	52.8	53.3
Commercial farming areas	26.2	0.6	17.9	3.2	10.3	1.5	40.5	44.2
<b>Sector</b>								
Agriculture, forestry and fishing	50.7	1.9	42.6	4.9	-	-	-	47.5
Mining and quarrying	97.9	0.1	1.9	0.1	-	-	-	2.0
Manufacturing	77.1	0.4	12.5	10.0	-	-	-	22.5
Utilities	59.0	1.1	29.0	10.9	-	-	-	39.9
Construction	30.5	3.0	54.3	12.2	-	-	-	66.5
Wholesale and retail trade	69.0	4.5	16.9	9.7	-	-	-	26.6
Transport, storage and communication	60.0	13.8	20.5	5.7	-	-	-	26.2
Financial and business services	87.5	2.3	8.2	2.0	-	-	-	10.2
Community, social and personal services	77.4	2.2	15.1	5.3	-	-	-	20.4
Private households	13.7	0.8	67.2	18.3	-	-	-	85.5
<b>Wages (Rands)</b>								
Mean Monthly Wage	6 260	20 237	1 845	1 684	-	-	-	-
Median Monthly Wage	4 100	10 000	1 300	1 000	-	-	-	-

Source: NIDS (2012).

Note: All statistics are weighted using calibrated Wave 3 weights. The current exchange rate is approximately US\$1 = R14.

**Table 5: Poverty headcount and poverty gap by employment status, 2012**

	Formal Employee	Formal Self-Employed	Informal Employee	Informal Self-Employed	Unemployed (Searching)	Unemployed (Non-Searching)	Not Economically Active
<i>Lower bound poverty line (R584per capita per month)</i>							
Headcount	17.5 (0.963)	4.9 (3.181)	44.5 (1.890)	37.7 (2.756)	56.5 (1.682)	59.1 (4.282)	58.7 (1.040)
Poverty gap	6.5 (0.367)	1.0 (0.561)	19.4 (0.935)	16.0 (1.259)	26.2 (0.887)	29.1 (2.304)	28.4 (0.574)
<i>Upper bound poverty line (R1 141per capita per month)</i>							
Headcount	34.1 (1.354)	10.5 (4.114)	70.8 (1.932)	64.1 (3.183)	78.7 (1.574)	79.8 (3.948)	76.1 (1.066)
Poverty gap	16.4 (0.686)	4.0 (1.957)	39.4 (1.247)	34.2 (1.874)	47.4 (1.079)	50.0 (2.825)	48.2 (0.743)

Source: NIDS (2012), Budlender et al (2015).

Note: All statistics are weighted using calibrated Wave 3 weights. The current exchange rate is approximately US\$1 = R14. Poverty lines expressed in December 2012 prices. Poverty measures are calculated using per capita household expenditure. Figures in parentheses are standard errors.

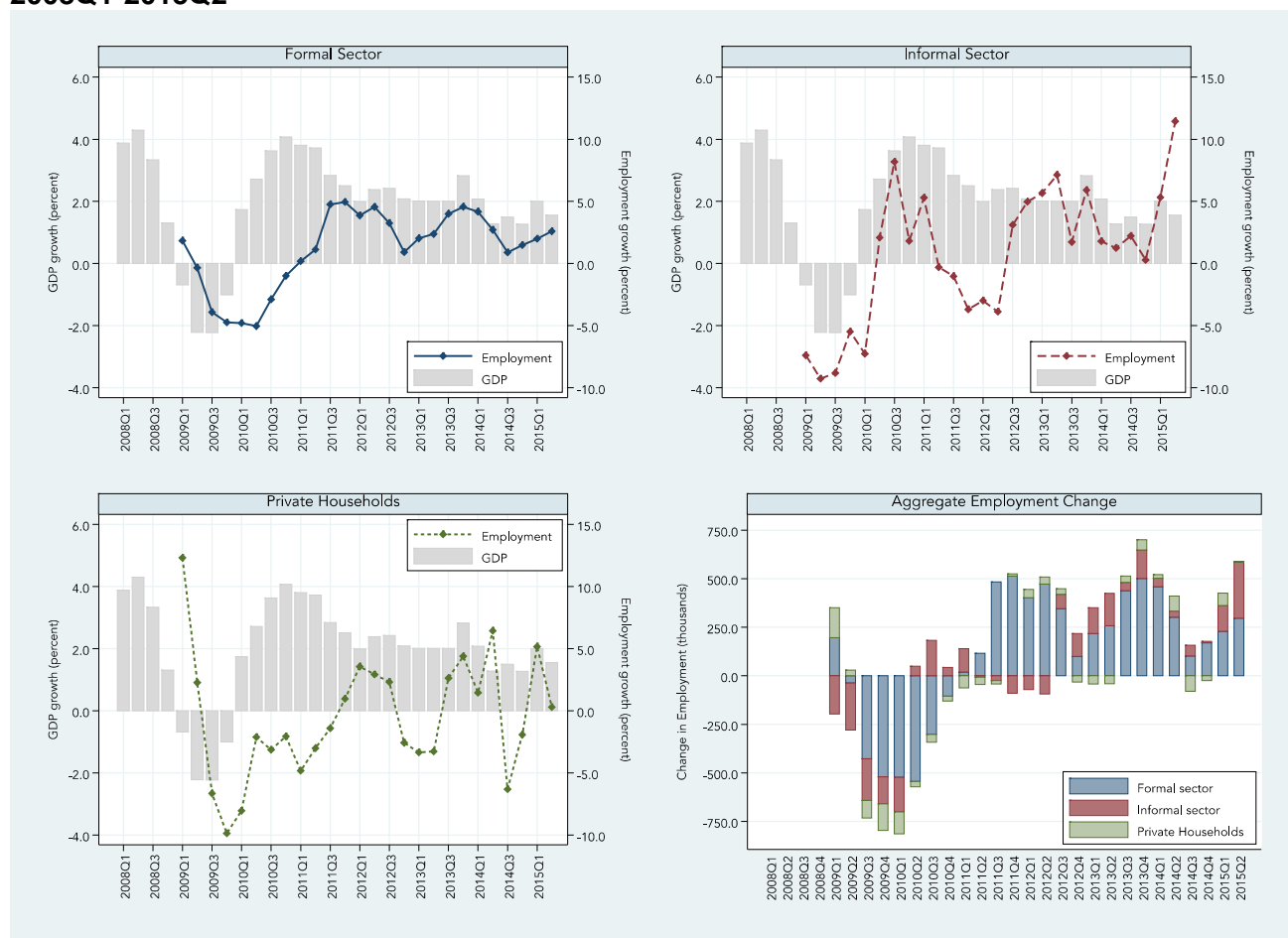
**Table 6: Decomposition of individual labour earnings, South Africa, 2012**

	Proportion of individuals	Share in total income	Gini for income for individuals receiving such income	Gini coefficient for income source	Gini correlation with total income rankings	Contribution to Gini coefficient of total income	Share in overall Gini
	$P_k$	$S_k$	$G_a$	$G_k$	$R_k$	$S_k G_k R_k$	Per cent
Formal employee	0.453	0.782	0.492	0.770	0.943	0.568	81.5
Formal self-employed	0.022	0.103	0.578	0.992	0.937	0.095	13.7
Informal employee	0.179	0.085	0.476	0.906	0.294	0.023	3.2
Informal self-employed	0.062	0.031	0.564	0.973	0.374	0.011	1.6
Unemployed	0.285	0.000	0.000	0.715	-1.000	0.000	0.0
TOTAL	1.000	1.000				0.697	100.0

Source: NIDS (2012).

Note: All statistics are weighted using calibrated Wave 3 weights. Zero incomes -for the employed and the unemployed -are adjusted by adding R 0.000001, so that these incomes are included in the estimations. The unemployed include both searching and non-searching unemployed.

**Figure 5: Economic growth and formal and informal employment in South Africa, 2008Q1-2015Q2**



Source: Own calculations, Quarterly Labour Force Surveys, 2008Q1-2015Q2 (Statistics South Africa); South African Reserve Bank (2015).

Notes: GDP growth rates calculated as quarterly year-on-year growth rates of seasonally adjusted real GDP at constant 2010 prices. Employment growth rates are quarterly year-on-year growth rates. QLFS data only begins in 2008Q1; therefore, year-on-year changes are only available from 2009Q1 onwards.

**Table 7: Correlation between quarterly employment change and GDP change, 2008-2015**

	Formal sector employment	Informal sector employment	Private household employment	Real GDP	Real GDP (lagged)
Formal sector employment	1.0000				
Informal sector employment	0.2792	1.0000			
Private household employment	0.6413	0.0176	1.0000		
Real GDP	0.2800	0.6297	-0.0059	1.0000	
Real GDP (lagged)	0.6231	-0.3801	0.3951	-0.4028	1.0000

Source: Quarterly Labour Force Surveys, 2008Q1-2015Q2 (Statistics South Africa); South African Reserve Bank (2015).

Notes: Correlation coefficients calculated using quarterly year-on-year employment and GDP growth rates.

**Table 8: South African labour market transition matrix, 2008 to 2012**

			Status in 2012						
			Formal Employee	Formal Self-employed	Informal Employee	Informal Self-employed	Searching Unemployed	Non-Searching Unemployed	Not Economically Active
<b>Year Total</b>			<b>29.9</b>	<b>1.2</b>	<b>12.0</b>	<b>5.1</b>	<b>15.8</b>	<b>2.6</b>	<b>33.4</b>
<b>Status in 2008</b>	Formal Employee	<b>23.0</b>	74.0	1.2	7.0	1.3	5.5	0.8	10.2
	Formal Self-employed	<b>1.4</b>	16.9	41.5	1.6	18.0	9.9	0.9	11.0
	Informal Employee	<b>13.3</b>	32.7	0.5	23.3	3.0	12.0	2.5	26.1
	Informal Self-employed	<b>7.7</b>	10.6	1.8	9.3	20.1	13.2	1.6	43.4
	Searching unemployed	<b>15.7</b>	21.1	0.6	14.8	5.2	26.6	2.7	29.1
	Non-search unemployed	<b>5.6</b>	12.7	0.1	13.3	4.9	26.4	7.9	34.6
	Not Economically Active	<b>33.3</b>	8.7	0.3	9.5	4.2	19.1	2.9	55.2

Source: Own calculations, NIDS Wave 1 and Wave 3.

Notes: All statistics weighted using Wave 1 to Wave 3 panel weights. Rows in the interior matrix sum to 100.0 per cent.

**Table 9: South African labour market transition matrix for Africans, 2008 to 2012**

			Status in 2012						
			Formal Employee	Formal Self-employed	Informal Employee	Informal Self-employed	Searching Unemployed	Non-Searching Unemployed	Not Economically Active
<b>Year Total</b>			<b>22.2</b>	<b>0.4</b>	<b>10.4</b>	<b>4.8</b>	<b>14.8</b>	<b>2.2</b>	<b>45.2</b>
<b>Status in 2008</b>	Formal Employee	<b>18.7</b>	73.3	0.4	7.5	1.6	5.7	0.8	10.6
	Formal Self-employed	<b>0.9</b>	22.8	21.8	1.4	23.1	18.1	1.7	11.1
	Informal Employee	<b>12.1</b>	32.4	0.3	25.6	3.3	12.3	2.2	23.9
	Informal Self-employed	<b>8.8</b>	9.0	1.5	8.6	19.4	12.7	1.6	47.3
	Searching unemployed	<b>16.2</b>	20.5	0.2	15.0	5.3	27.5	2.1	29.5
	Non-search. unemployed	<b>5.3</b>	11.9	0.2	13.0	5.8	29.6	6.9	32.5
	Not Economically Active	<b>38.0</b>	7.0	0.2	8.5	4.6	18.2	2.5	59.0

Source: Own calculations, NIDS Wave 1 and Wave 3.

Notes: All statistics weighted using Wave 1 to Wave 3 panel weights. Rows in the interior matrix sum to 100.0 per cent.

**Table 10: South African labour market transition matrix for males, 2008 to 2012**

Males			Status in 2012					Non-Searching Unemployed	Not Economically Active
			Formal Employee	Formal Self-employed	Informal Employee	Informal Self-employed	Searching Unemployed		
<b>Year Total</b>			<b>38.5</b>	<b>1.5</b>	<b>13.0</b>	<b>5.7</b>	<b>14.8</b>	<b>1.7</b>	<b>24.8</b>
<b>Status in 2008</b>	Formal Employee	<b>31.9</b>	75.3	1.6	7.6	1.6	4.4	0.9	8.6
	Formal Self-employed	<b>2.1</b>	16.3	41.1	1.7	15.3	11.7	0.0	13.9
	Informal Employee	<b>15.8</b>	36.7	0.3	22.2	4.1	9.9	2.4	24.2
	Informal Self-employed	<b>6.9</b>	15.2	1.2	12.4	22.0	18.0	0.4	30.9
	Searching unemployed	<b>12.4</b>	30.5	0.3	14.7	6.4	27.4	1.2	19.5
	Non-search. unemployed	<b>3.3</b>	14.4	0.0	15.2	5.3	39.9	1.5	23.8
	Not Economically Active	<b>27.6</b>	11.7	0.5	11.9	4.5	22.9	1.8	46.7

Source: Own calculations, NIDS Wave 1 and Wave 3.

Notes: All statistics weighted using Wave 1 to Wave 3 panel weights. Rows in the interior matrix sum to 100.0 per cent.

**Table 11: South African labour market transition matrix for females, 2008 to 2012**

Females			Status in 2012					Non-Searching Unemployed	Not Economically Active
			Formal Employee	Formal Self-employed	Informal Employee	Informal Self-employed	Searching Unemployed		
<b>Year Total</b>			<b>23.3</b>	<b>0.9</b>	<b>11.3</b>	<b>4.6</b>	<b>16.5</b>	<b>3.3</b>	<b>40.0</b>
<b>Status in 2008</b>	Formal Employee	<b>16.7</b>	72.2	0.6	6.2	1.0	7.0	0.6	12.3
	Formal Self-employed	<b>0.9</b>	18.0	42.1	1.5	22.5	7.2	2.5	6.3
	Informal Employee	<b>11.5</b>	28.8	0.6	24.4	1.8	14.0	2.6	27.9
	Informal Self-employed	<b>8.2</b>	7.9	2.1	7.4	18.9	10.4	2.3	51.0
	Searching unemployed	<b>18.1</b>	16.5	0.7	14.8	4.6	26.2	3.4	33.7
	Non-search. unemployed	<b>7.3</b>	12.2	0.2	12.7	4.8	22.0	10.0	38.0
	Not Economically Active	<b>37.3</b>	7.1	0.1	8.3	4.1	17.1	3.5	59.8

Source: Own calculations, NIDS Wave 1 and Wave 3.

Notes: All statistics weighted using Wave 1 to Wave 3 panel weights. Rows in the interior matrix sum to 100.0 per cent.

**Table 12: South African labour market transition matrix for 15-34 year olds, 2008 to 2012**

15-34 year olds			Status in 2012						
			Formal Employee	Formal Self-employed	Informal Employee	Informal Self-employed	Searching Unemployed	Non-Searching Unemployed	Not Economically Active
	<b>Year Total</b>		<b>29.3</b>	<b>1.0</b>	<b>13.0</b>	<b>3.9</b>	<b>22.3</b>	<b>2.4</b>	<b>28.0</b>
<b>Status in 2008</b>	Formal Employee	<b>17.5</b>	71.8	2.0	8.7	1.2	7.0	0.4	8.8
	Formal Self-employed	<b>0.7</b>	33.8	42.2	4.1	16.7	0.0	0.0	3.1
	Informal Employee	<b>11.7</b>	39.4	0.4	20.0	3.4	16.2	2.2	18.4
	Informal Self-employed	<b>5.2</b>	19.6	1.5	16.8	11.4	23.3	1.5	25.9
	Searching unemployed	<b>20.0</b>	23.0	0.8	14.2	4.7	30.6	2.4	24.2
	Non-search. unemployed	<b>5.9</b>	19.2	0.3	15.2	4.2	29.9	4.0	27.2
	Not Economically Active	<b>39.0</b>	11.7	0.3	10.9	2.9	27.1	3.0	44.1

Source: Own calculations, NIDS Wave 1 and Wave 3.

Notes: All statistics weighted using Wave 1 to Wave 3 panel weights. Rows in the interior matrix sum to 100.0 per cent.

**Table 13: South African labour market transition matrix for 35-64 year olds, 2008 to 2012**

35-64 year olds			Status in 2012						
			Formal Employee	Formal Self-employed	Informal Employee	Informal Self-employed	Searching Unemployed	Non-Searching Unemployed	Not Economically Active
	<b>Year Total</b>		<b>30.6</b>	<b>1.4</b>	<b>10.8</b>	<b>6.5</b>	<b>8.2</b>	<b>2.8</b>	<b>39.7</b>
<b>Status in 2008</b>	Formal Employee	<b>29.4</b>	75.5	0.6	5.9	1.4	4.5	1.1	11.1
	Formal Self-employed	<b>2.2</b>	10.9	41.3	0.7	18.5	13.5	1.3	13.8
	Informal Employee	<b>15.1</b>	26.8	0.5	26.2	2.6	8.3	2.7	32.8
	Informal Self-employed	<b>10.5</b>	5.7	1.9	5.1	24.9	7.6	1.6	53.2
	Searching unemployed	<b>10.8</b>	17.0	0.1	16.0	6.2	18.1	3.3	39.3
	Non-search. unemployed	<b>5.3</b>	4.6	0.0	11.1	5.9	21.9	12.8	43.8
	Not Economically Active	<b>26.7</b>	3.7	0.2	7.4	6.4	5.8	2.8	73.7

Source: Own calculations, NIDS Wave 1 and Wave 3.

Notes: All statistics weighted using Wave 1 to Wave 3 panel weights. Rows in the interior matrix sum to 100.0 per cent.



**Table 14: South African labour market transition matrix for those with less than 12 years of education, 2008 to 2012**

Less than 12 years of education			Status in 2012						
			Formal Employee	Formal Self-employed	Informal Employee	Informal Self-employed	Searching Unemployed	Non-Searching Unemployed	Not Economically Active
<b>Year Total</b>			<b>20.4</b>	<b>0.5</b>	<b>13.6</b>	<b>5.5</b>	<b>16.8</b>	<b>3.1</b>	<b>40.2</b>
<b>Status in 2008</b>	Formal Employee	<b>14.5</b>	60.9	0.9	12.5	2.2	8.3	1.8	13.5
	Formal Self-employed	<b>0.8</b>	25.1	9.1	0.1	16.2	26.0	2.5	21.0
	Informal Employee	<b>14.8</b>	29.4	0.2	24.9	3.3	11.0	2.9	28.4
	Informal Self-employed	<b>8.8</b>	8.2	1.4	9.2	20.0	11.7	1.3	48.2
	Searching unemployed	<b>14.9</b>	15.5	0.7	16.1	5.7	26.5	3.4	32.1
	Non-search. unemployed	<b>6.5</b>	9.8	0.2	14.2	4.8	26.5	7.9	36.6
	Not Economically Active	<b>39.8</b>	6.3	0.1	9.2	4.3	17.9	3.1	59.0

Source: Own calculations, NIDS Wave 1 and Wave 3.

Notes: All statistics weighted using Wave 1 to Wave 3 panel weights. Rows in the interior matrix sum to 100.0 per cent.

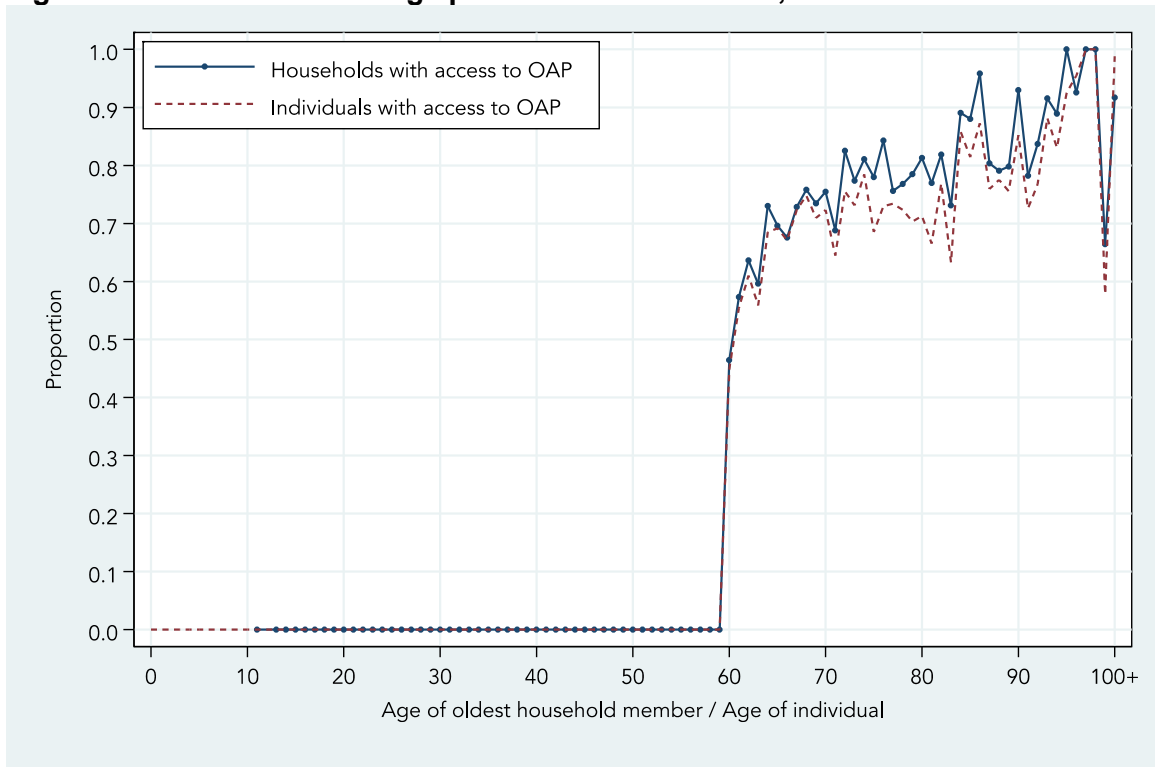
**Table 15: South African labour market transition matrix for those with at least 12 years of education, 2008 to 2012**

At least 12 years of education			Status in 2012						
			Formal Employee	Formal Self-employed	Informal Employee	Informal Self-employed	Searching Unemployed	Non-Searching Unemployed	Not Economically Active
<b>Year Total</b>			<b>51.2</b>	<b>2.7</b>	<b>8.8</b>	<b>4.1</b>	<b>13.2</b>	<b>1.7</b>	<b>18.3</b>
<b>Status in 2008</b>	Formal Employee	<b>43.2</b>	83.9	1.4	3.0	0.6	3.3	0.0	7.7
	Formal Self-employed	<b>2.9</b>	11.8	61.6	2.6	19.2	0.0	0.0	4.9
	Informal Employee	<b>9.8</b>	43.7	1.4	17.5	1.8	15.1	1.1	19.5
	Informal Self-employed	<b>4.9</b>	20.7	3.5	9.5	20.5	19.6	2.7	23.5
	Searching unemployed	<b>17.5</b>	32.0	0.4	12.2	4.2	26.7	1.2	23.3
	Non-search. unemployed	<b>3.8</b>	24.2	0.0	11.9	5.2	25.3	7.7	25.7
	Not Economically Active	<b>17.9</b>	21.0	1.1	11.4	3.8	25.0	2.0	35.6

Source: Own calculations, NIDS Wave 1 and Wave 3.

Notes: All statistics weighted using Wave 1 to Wave 3 panel weights. Rows in the interior matrix sum to 100.0 per cent.

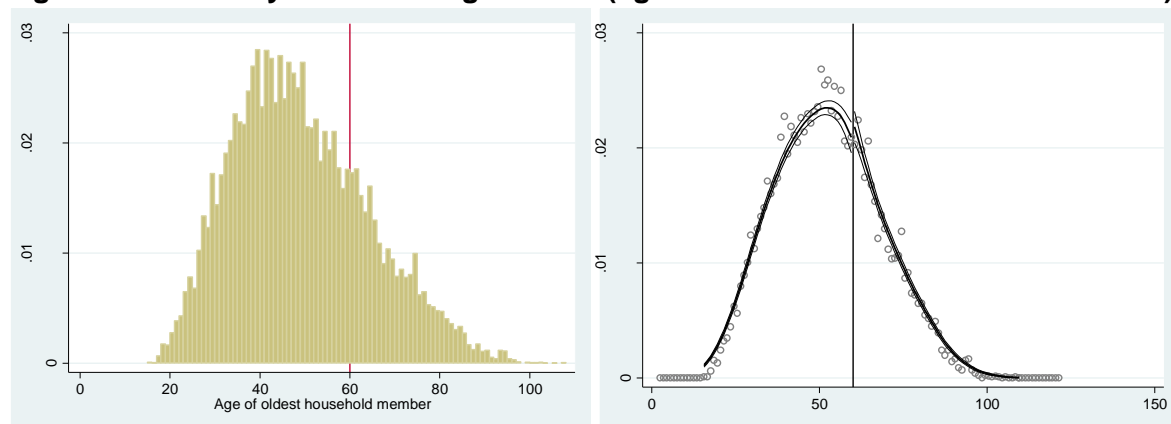
**Figure 6: Access to the old age pension in South Africa, 2014**



Source: Own calculations, GHS (2014).

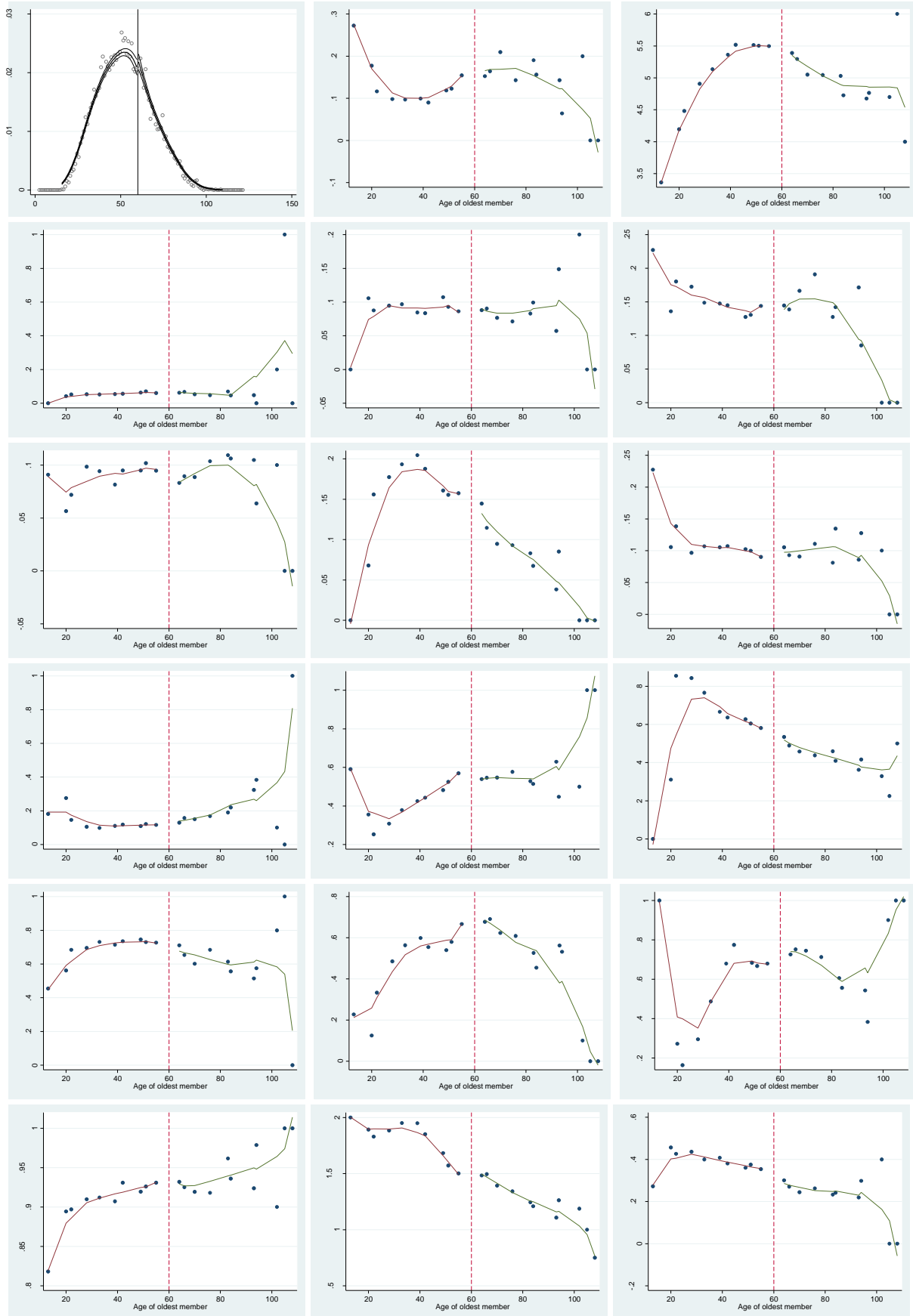
Notes: Household access rates calculated according to the age of the oldest household member.

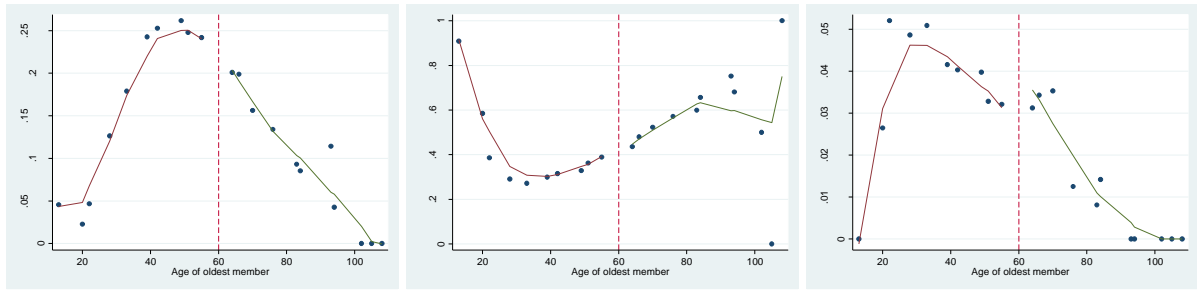
**Figure 7: Continuity of the forcing variable (age of oldest member of the household)**



Source: Own calculations, GHS (2014).

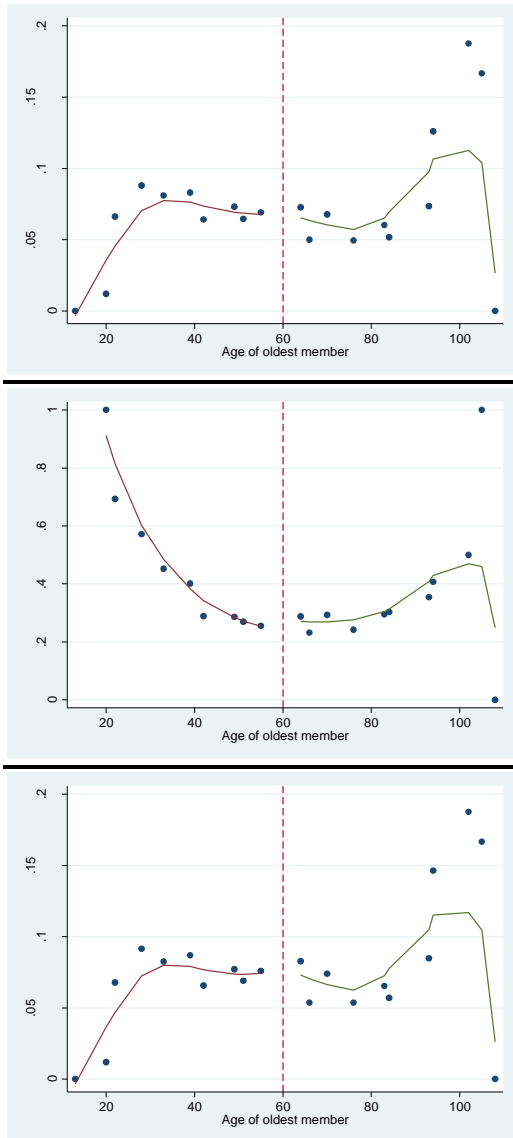
Figure 8: Checking for balanced covariates





Source: Own calculations, GHS (2014).

**Figure 9: Checking for discontinuities in the outcome variable**



Source: Own calculations, GHS (2014).

**Table 16: Non-parametric OLS and fuzzy RDD estimates of the effect of pension receipt on Informality Measure I**

Informality Measure I	OLS		2SLS	
	Optimal Bandwidth	Double Optimal Bandwidth	Optimal Bandwidth	Double Optimal Bandwidth
	(1)	(2)	(3)	(4)
Old-Age Pension in HH	-0.020 (0.02)	-0.008 (0.01)	-0.049 (0.06)	0.040 (0.04)
Oldest Age	0.028** (0.01)	0.001 (0.00)	0.037* (0.02)	-0.007 (0.01)
LSM Category	-0.020** (0.01)	-0.013** (0.01)	-0.021** (0.01)	-0.012** (0.01)
Other Grant in HH	-0.031 (0.02)	-0.026** (0.01)	-0.031 (0.02)	-0.026** (0.01)
Mean Years Education	-0.001 (0.00)	0.001 (0.00)	-0.002 (0.00)	0.001 (0.00)
# Children Aged 0-6 in HH	-0.006 (0.01)	-0.007 (0.01)	-0.005 (0.01)	-0.007 (0.01)
# Children Aged 7-14 in HH	-0.009 (0.01)	-0.005 (0.01)	-0.008 (0.01)	-0.005 (0.01)
Running Water in HH	0.020 (0.02)	-0.004 (0.02)	0.020 (0.02)	-0.005 (0.02)
Electricity in HH	0.053 (0.04)	0.031 (0.03)	0.054 (0.04)	0.029 (0.03)
Mean # mobiles in HH	0.009 (0.01)	0.013 (0.01)	0.008 (0.01)	0.013 (0.01)
Internet in HH	-0.022 (0.02)	-0.011 (0.01)	-0.022 (0.02)	-0.010 (0.01)
Vehicle in HH	0.009 (0.02)	-0.007 (0.01)	0.006 (0.02)	-0.004 (0.01)
Traditional rural area	-0.033 (0.03)	-0.032** (0.02)	-0.033 (0.02)	-0.033** (0.02)
Commercial agricultural area	0.036 (0.05)	0.025 (0.03)	0.039 (0.05)	0.021 (0.03)
Constant	-1.527** (0.66)	0.076 (0.19)	-2.057* (1.19)	0.492 (0.35)
R-Squared	0.051	0.028	0.048	0.021
N	813	1 803	813	1 803

Source: GHS (2014). Own Calculations.

Notes: 1. Weighted using household weights. 2. 'Mean years education' is the mean years of education for adult household members. 3. The base area dummy is urban. 3. Province dummies are included in each regression but not reported.

**Table 17: Non-parametric OLS and fuzzy RDD estimates of the effect of pension receipt on Informality Measure II**

Informality Measure II	OLS		2SLS	
	Optimal Bandwidth	Double Optimal Bandwidth	Optimal Bandwidth	Double Optimal Bandwidth
	(1)	(2)	(3)	(4)
Old-Age Pension in HH	-0.017 (0.05)	0.018 (0.04)	-0.208 (0.21)	0.184 (0.16)
Oldest Age	0.075*** (0.03)	0.004 (0.01)	0.127** (0.06)	-0.027 (0.03)
LSM Category	-0.099*** (0.02)	-0.071*** (0.02)	-0.113*** (0.03)	-0.065*** (0.02)
Other Grant in HH	-0.070 (0.05)	-0.068* (0.04)	-0.073 (0.05)	-0.064 (0.04)
Mean Years Education	-0.025*** (0.01)	-0.028*** (0.01)	-0.027*** (0.01)	-0.025*** (0.01)
# Children Aged 0-6 in HH	-0.038** (0.02)	-0.054*** (0.02)	-0.033* (0.02)	-0.058*** (0.02)
# Children Aged 7-14 in HH	-0.060** (0.02)	-0.044** (0.02)	-0.064*** (0.02)	-0.041** (0.02)
Running Water in HH	-0.022 (0.07)	-0.083 (0.05)	-0.006 (0.07)	-0.090* (0.05)
Electricity in HH	0.236** (0.11)	0.107 (0.08)	0.242** (0.11)	0.110 (0.08)
Mean # mobiles in HH	0.082* (0.05)	0.078** (0.04)	0.085* (0.05)	0.077** (0.04)
Internet in HH	-0.101** (0.04)	-0.068** (0.03)	-0.095** (0.04)	-0.069** (0.03)
Vehicle in HH	0.019 (0.06)	-0.012 (0.04)	0.013 (0.06)	-0.009 (0.04)
Traditional rural area	-0.088 (0.07)	-0.070 (0.05)	-0.083 (0.07)	-0.078 (0.05)
Commercial agricultural area	-0.140 (0.11)	-0.137 (0.09)	-0.079 (0.13)	-0.182* (0.10)
Constant	-3.615** (1.65)	0.628 (0.81)	-6.577* (3.50)	2.374 (1.80)
R-Squared	0.262	0.220	0.228	0.198
N	370	615	370	615

Source: GHS 2014. Own Calculations.

Notes: 1. Weighted using household weights. 2. 'Mean years education' is the mean years of education for adult household members. 3. The base area dummy is urban. 3. Province dummies are included in each regression but not reported.

**Table 18: Non-parametric OLS and fuzzy RDD estimates of the effect of pension receipt on Informality Measure III**

Informality Measure III	OLS		2SLS	
	Optimal Bandwidth	Double Optimal Bandwidth	Optimal Bandwidth	Double Optimal Bandwidth
	(1)	(2)	(3)	(4)
Old-Age Pension in HH	-0.022 (0.02)	-0.011 (0.01)	-0.033 (0.06)	0.050 (0.04)
Oldest Age	0.033*** (0.01)	0.002 (0.00)	0.036 (0.02)	-0.007 (0.01)
LSM Category	-0.019* (0.01)	-0.012* (0.01)	-0.019* (0.01)	-0.010 (0.01)
Other Grant in HH	-0.026 (0.02)	-0.027* (0.01)	-0.026 (0.02)	-0.027* (0.01)
Mean Years Education	-0.000 (0.00)	0.002 (0.00)	-0.000 (0.00)	0.003 (0.00)
# Children Aged 0-6 in HH	-0.004 (0.01)	-0.005 (0.01)	-0.004 (0.01)	-0.006 (0.01)
# Children Aged 7-14 in HH	-0.007 (0.01)	-0.004 (0.01)	-0.007 (0.01)	-0.004 (0.01)
Running Water in HH	0.024 (0.03)	-0.001 (0.02)	0.024 (0.03)	-0.002 (0.02)
Electricity in HH	0.046 (0.04)	0.021 (0.03)	0.046 (0.04)	0.019 (0.03)
Mean # mobiles in HH	0.004 (0.02)	0.009 (0.01)	0.004 (0.02)	0.009 (0.01)
Internet in HH	-0.015 (0.02)	-0.008 (0.01)	-0.015 (0.02)	-0.006 (0.01)
Vehicle in HH	0.014 (0.03)	-0.002 (0.02)	0.013 (0.03)	0.002 (0.02)
Traditional rural area	-0.033 (0.03)	-0.029* (0.02)	-0.033 (0.03)	-0.031* (0.02)
Commercial agricultural area	0.066 (0.05)	0.043 (0.04)	0.067 (0.05)	0.038 (0.04)
Constant	-1.809** (0.70)	-0.004 (0.21)	-2.008 (1.27)	0.524 (0.38)
R-Squared	0.048	0.024	0.048	0.014
N	813	1 803	813	1 803

Source: GHS 2014. Own Calculations.

Notes: 1. Weighted using household weights. 2. 'Mean years education' is the mean years of education for adult household members. 3. The base area dummy is urban. 3. Province dummies are included in each regression but not reported.

**Table 19: Parametric OLS and fuzzy RDD estimates of the effect of pension receipt on Informality Measure I**

Informality Measure I	OLS						2SLS					
	Linear	Linear Flexible	Quadratic	Quadratic Flexible	Cubic	Cubic Flexible	Linear	Linear Flexible	Quadratic	Quadratic Flexible	Cubic	Cubic Flexible
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Old-Age Pension in HH	-0.014*	0.009	-0.008	0.204	0.002	1.092	-0.018*	0.011	-0.011	0.475	0.012	2.083
	(0.01)	(0.04)	(0.01)	(0.29)	(0.01)	(1.96)	(0.01)	(0.04)	(0.01)	(0.32)	(0.01)	(2.16)
Oldest Age	0.000**	0.000**	0.002**	0.004***	0.012***	0.019***	0.001**	0.001**	0.002**	0.006***	0.013***	0.040***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
LSM Category	-0.013***	-0.014***	-0.014***	-0.014***	-0.014***	-0.014***	-0.014***	-0.014***	-0.014***	-0.013***	-0.014***	-0.015***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Other Grant in HH	-0.034***	-0.034***	-0.034***	-0.034***	-0.034***	-0.034***	-0.034***	-0.034***	-0.034***	-0.034***	-0.034***	-0.035***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Mean Years Education	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.003***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
# Children Aged 0-6 in HH	-0.003	-0.003	-0.003	-0.003	-0.004	-0.004	-0.003	-0.003	-0.003	-0.003	-0.004	-0.005*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
# Children Aged 7-14 in HH	0.003	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.002	0.002	0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Running Water in HH	-0.020***	-0.020***	-0.020***	-0.020***	-0.019***	-0.019***	-0.020***	-0.020***	-0.020***	-0.020***	-0.019***	-0.019***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Electricity in HH	-0.018**	-0.018**	-0.018*	-0.018*	-0.018*	-0.017*	-0.018**	-0.018*	-0.017*	-0.018**	-0.018*	-0.016*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Mean # mobiles in HH	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***	0.015***	0.014***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Internet in HH	-0.029***	-0.029***	-0.029***	-0.029***	-0.029***	-0.029***	-0.029***	-0.029***	-0.029***	-0.029***	-0.029***	-0.029***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Vehicle in HH	-0.008	-0.008	-0.009	-0.009	-0.009	-0.009	-0.008	-0.009	-0.009	-0.009	-0.009	-0.009
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Traditional rural area	-0.042***	-0.042***	-0.042***	-0.041***	-0.041***	-0.041***	-0.042***	-0.042***	-0.042***	-0.041***	-0.041***	-0.040***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Commercial agricultural area	-0.021	-0.022	-0.022	-0.021	-0.021	-0.021	-0.021	-0.022	-0.022	-0.020	-0.021	-0.023*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)



Old-Age Pension in HH*Oldest Age	-0.000 (0.00)			-0.007 (0.01)			-0.049 (0.08)			-0.000 (0.00)	-0.015* (0.01)		-0.097 (0.09)
Oldest Age Squared			-0.000* (0.00)	-0.000*** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)				-0.000 (0.00)	-0.000*** (0.00)	-0.000*** (0.00)	-0.001*** (0.00)
Old-Age Pension in HH*Oldest Age Squared				0.000 (0.00)			0.001 (0.00)				0.000** (0.00)		0.002 (0.00)
Oldest Age Cubed						0.000*** (0.00)	0.000*** (0.00)					0.000*** (0.00)	0.000*** (0.00)
Old-Age Pension in HH*Oldest Cubed							-0.000 (0.00)						-0.000* (0.00)
Constant	0.152*** (0.02)	0.150*** (0.02)	0.120*** (0.02)	0.076** (0.03)	-0.034 (0.05)	-0.125* (0.07)	0.149*** (0.02)	0.146*** (0.02)	0.121*** (0.02)	0.034 (0.04)	-0.055 (0.06)		-0.370*** (0.13)
R-Squared	0.030	0.030	0.030	0.031	0.031	0.031	0.030	0.030	0.030	0.030	0.031	0.023	
N	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248

Source: GHS 2014. Own Calculations.

Notes: 1. Weighted using household weights. 2. 'Mean years education' is the mean years of education for adult household members. 3. The base area dummy is urban. 4. Province dummies are included but not reported in each regression. 5. Excluded instruments include a) a dummy 'X' for if the oldest household member is over 60; b) Dummy 'X' interacted with the age of the oldest household member; c) Dummy 'X' interacted with the age of the oldest household member squared and d) Dummy 'X' interacted with the age of the oldest household member cubed. Each of the above regressions include the following excluded instruments: (1) a ; (2) a, b ; (3) a (4) a, b, c; (5) a; (6) a, b, c, d; (7) a ; (8) a, b ; (9) a (10) a, b, c; (11) a; (12) a, b, c, d.

**Table 20: Parametric OLS and fuzzy RDD estimates of the effect of pension receipt on Informality Measure II**

Informality Measure II	OLS						2SLS					
	Linear	Linear Flexible	Quadratic	Quadratic Flexible	Cubic	Cubic Flexible	Linear	Linear Flexible	Quadratic	Quadratic Flexible	Cubic	Cubic Flexible
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Old-Age Pension in HH	0.003 (0.02)	-0.092 (0.11)	-0.018 (0.02)	0.043 (0.76)	-0.043* (0.02)	7.485 (4.83)	0.065** (0.03)	-0.016 (0.12)	0.047 (0.03)	0.274 (0.89)	0.011 (0.04)	7.670 (5.40)
Oldest Age	-0.002** (0.00)	-0.002** (0.00)	-0.009*** (0.00)	-0.021*** (0.00)	-0.041*** (0.01)	-0.042** (0.02)	-0.003*** (0.00)	-0.003*** (0.00)	-0.008*** (0.00)	-0.025*** (0.01)	-0.030** (0.01)	-0.023 (0.05)
LSM Category	-0.088*** (0.01)	-0.088*** (0.01)	-0.087*** (0.01)	-0.086*** (0.01)	-0.086*** (0.01)	-0.086*** (0.01)	-0.086*** (0.01)	-0.086*** (0.01)	-0.085*** (0.01)	-0.086*** (0.01)	-0.085*** (0.01)	-0.086*** (0.01)
Other Grant in HH	-0.053*** (0.01)	-0.053*** (0.02)	-0.051*** (0.01)	-0.052*** (0.01)	-0.051*** (0.01)	-0.052*** (0.01)	-0.051*** (0.01)	-0.050*** (0.02)	-0.050*** (0.01)	-0.052*** (0.01)	-0.050*** (0.01)	-0.052*** (0.01)
Mean Years Education	-0.014*** (0.00)	-0.014*** (0.00)	-0.014*** (0.00)	-0.015*** (0.00)	-0.015*** (0.00)	-0.015*** (0.00)	-0.014*** (0.00)	-0.014*** (0.00)	-0.014*** (0.00)	-0.016*** (0.00)	-0.015*** (0.00)	-0.016*** (0.00)
# Children Aged 0-6 in HH	-0.026*** (0.01)	-0.026*** (0.01)	-0.026*** (0.01)	-0.027*** (0.01)	-0.027*** (0.01)	-0.027*** (0.01)	-0.027*** (0.01)	-0.027*** (0.01)	-0.027*** (0.01)	-0.028*** (0.01)	-0.027*** (0.01)	-0.028*** (0.01)
# Children Aged 7-14 in HH	-0.026*** (0.01)	-0.026*** (0.01)	-0.024*** (0.01)	-0.024*** (0.01)	-0.024*** (0.01)	-0.024*** (0.01)	-0.025*** (0.01)	-0.025*** (0.01)	-0.024*** (0.01)	-0.024*** (0.01)	-0.024*** (0.01)	-0.024*** (0.01)
Running Water in HH	-0.049*** (0.02)	-0.049*** (0.02)	-0.047** (0.02)	-0.046** (0.02)	-0.047** (0.02)	-0.048** (0.02)	-0.049*** (0.02)	-0.048** (0.02)	-0.047** (0.02)	-0.046** (0.02)	-0.047** (0.02)	-0.047** (0.02)
Electricity in HH	0.027 (0.03)	0.026 (0.03)	0.023 (0.03)	0.020 (0.03)	0.019 (0.03)	0.019 (0.03)	0.025 (0.03)	0.024 (0.03)	0.022 (0.03)	0.019 (0.03)	0.020 (0.03)	0.019 (0.03)
Mean # mobiles in HH	0.217*** (0.01)	0.217*** (0.01)	0.216*** (0.01)	0.216*** (0.01)	0.216*** (0.01)	0.217*** (0.01)	0.216*** (0.01)	0.215*** (0.01)	0.215*** (0.01)	0.216*** (0.01)	0.216*** (0.01)	0.217*** (0.01)
Internet in HH	-0.110*** (0.01)	-0.110*** (0.01)	-0.111*** (0.01)	-0.111*** (0.01)	-0.110*** (0.01)	-0.112*** (0.01)	-0.108*** (0.01)	-0.108*** (0.01)	-0.109*** (0.01)	-0.111*** (0.01)	-0.109*** (0.01)	-0.112*** (0.01)
Vehicle in HH	-0.032* (0.02)	-0.032* (0.02)	-0.030* (0.02)	-0.028 (0.02)	-0.028* (0.02)	-0.027 (0.02)	-0.030* (0.02)	-0.030* (0.02)	-0.029* (0.02)	-0.027 (0.02)	-0.028* (0.02)	-0.027 (0.02)
Traditional rural area	-0.043** (0.02)	-0.042** (0.02)	-0.041** (0.02)	-0.042** (0.02)	-0.042** (0.02)	-0.042** (0.02)	-0.043** (0.02)	-0.042** (0.02)	-0.042** (0.02)	-0.042** (0.02)	-0.042** (0.02)	-0.042** (0.02)
Commercial agricultural area	-0.137*** (0.04)	-0.135*** (0.04)	-0.131*** (0.04)	-0.138*** (0.04)	-0.133*** (0.04)	-0.139*** (0.04)	-0.136*** (0.04)	-0.134*** (0.04)	-0.132*** (0.04)	-0.141*** (0.04)	-0.133*** (0.04)	-0.142*** (0.04)

Old-Age Pension in HH*Oldest Age	0.001 (0.00)		0.005 (0.02)		-0.283 (0.19)		0.001 (0.00)		0.001 (0.02)		-0.294 (0.21)	
Oldest Age Squared		0.000*** (0.00)	0.000*** (0.00)	0.001*** (0.00)	0.001 (0.00)			0.000* (0.00)	0.000*** (0.00)	0.000* (0.00)	0.000 (0.00)	
Old-Age Pension in HH*Oldest Age Squared			-0.000 (0.00)		0.004 (0.00)				-0.000 (0.00)		0.004 (0.00)	
Oldest Age Cubed				-0.000*** (0.00)	-0.000 (0.00)					-0.000 (0.00)	0.000 (0.00)	
Old-Age Pension in HH*Oldest Cubed					-0.000 (0.00)						-0.000 (0.00)	
Constant	0.817*** (0.05)	0.828*** (0.06)	1.006*** (0.08)	1.270*** (0.12)	1.540*** (0.22)	1.582*** (0.31)	0.864*** (0.06)	0.876*** (0.06)	0.987*** (0.08)	1.358*** (0.17)	1.349*** (0.25)	1.329** (0.63)
R-Squared	0.236	0.237	0.238	0.240	0.239	0.240	0.235	0.235	0.236	0.239	0.238	0.240
N	4 254	4 254	4 254	4 254	4 254	4 254	4 254	4 254	4 254	4 254	4 254	4 254

Source: GHS 2014. Own Calculations.

Notes: 1. Weighted using household weights. 2. 'Mean years education' is the mean years of education for adult household members. 3. The base area dummy is urban. 4. Province dummies are included but not reported in each regression. 5. Excluded instruments include a) a dummy 'X' for if the oldest household member is over 60; b) Dummy 'X' interacted with the age of the oldest household member; c) Dummy 'X' interacted with the age of the oldest household member squared and d) Dummy 'X' interacted with the age of the oldest household member cubed. Each of the above regressions include the following excluded instruments: (1) a ; (2) a, b ; (3) a (4) a, b, c; (5) a; (6) a, b, c, d; (7) a ; (8) a, b ; (9) a (10) a, b, c; (11) a; (12) a, b, c, d.

**Table 21: Parametric OLS and Fuzzy RDD estimates of the effect of pension receipt on Informality Measure II**

Informality Measure II	OLS						2SLS					
	Linear	Linear Flexible	Quadratic	Quadratic Flexible	Cubic	Cubic Flexible	Linear	Linear Flexible	Quadratic	Quadratic Flexible	Cubic	Cubic Flexible
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Old-Age Pension in HH	-0.015** (0.01)	0.015 (0.04)	-0.009 (0.01)	0.260 (0.30)	0.001 (0.01)	1.525 (2.05)	-0.017* (0.01)	0.023 (0.04)	-0.009 (0.01)	0.631* (0.33)	0.014 (0.01)	2.885 (2.26)
Oldest Age	0.001*** (0.00)	0.001*** (0.00)	0.002** (0.00)	0.004*** (0.00)	0.012*** (0.00)	0.019*** (0.01)	0.001** (0.00)	0.001*** (0.00)	0.002** (0.00)	0.006*** (0.00)	0.013*** (0.00)	0.041*** (0.01)
LSM Category	-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)	-0.013*** (0.00)	-0.014*** (0.00)
Other Grant in HH	-0.033*** (0.01)	-0.033*** (0.01)	-0.034*** (0.01)	-0.034*** (0.01)	-0.034*** (0.01)	-0.034*** (0.01)	-0.033*** (0.01)	-0.034*** (0.01)	-0.034*** (0.01)	-0.033*** (0.01)	-0.033*** (0.01)	-0.034*** (0.01)
Mean Years Education	0.005*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.005*** (0.00)	0.004*** (0.00)
# Children Aged 0-6 in HH	-0.002 (0.00)	-0.002 (0.00)	-0.002 (0.00)	-0.002 (0.00)	-0.003 (0.00)	-0.003 (0.00)	-0.002 (0.00)	-0.002 (0.00)	-0.002 (0.00)	-0.002 (0.00)	-0.003 (0.00)	-0.004 (0.00)
# Children Aged 7-14 in HH	0.003 (0.00)	0.003 (0.00)	0.003 (0.00)	0.003 (0.00)	0.003 (0.00)	0.002 (0.00)	0.003 (0.00)	0.003 (0.00)	0.003 (0.00)	0.003 (0.00)	0.002 (0.00)	0.002 (0.00)
Running Water in HH	-0.022*** (0.01)	-0.022*** (0.01)	-0.022*** (0.01)	-0.022*** (0.01)	-0.022*** (0.01)	-0.021*** (0.01)	-0.022*** (0.01)	-0.022*** (0.01)	-0.022*** (0.01)	-0.022*** (0.01)	-0.021*** (0.01)	-0.021*** (0.01)
Electricity in HH	-0.019** (0.01)	-0.019** (0.01)	-0.019** (0.01)	-0.019** (0.01)	-0.019** (0.01)	-0.019** (0.01)	-0.019** (0.01)	-0.019** (0.01)	-0.019** (0.01)	-0.020** (0.01)	-0.019** (0.01)	-0.017* (0.01)
Mean # mobiles in HH	0.014*** (0.00)	0.014*** (0.00)	0.014*** (0.00)	0.014*** (0.00)	0.014*** (0.00)	0.013*** (0.00)	0.014*** (0.00)	0.014*** (0.00)	0.014*** (0.00)	0.014*** (0.00)	0.013*** (0.00)	0.013*** (0.00)
Internet in HH	-0.028*** (0.00)	-0.028*** (0.00)	-0.028*** (0.00)	-0.027*** (0.00)	-0.027*** (0.00)	-0.027*** (0.00)	-0.028*** (0.00)	-0.028*** (0.00)	-0.028*** (0.00)	-0.027*** (0.00)	-0.027*** (0.00)	-0.028*** (0.00)
Vehicle in HH	-0.007 (0.01)	-0.007 (0.01)	-0.007 (0.01)	-0.008 (0.01)	-0.008 (0.01)	-0.008 (0.01)	-0.007 (0.01)	-0.007 (0.01)	-0.007 (0.01)	-0.007 (0.01)	-0.007 (0.01)	-0.008 (0.01)
Traditional rural area	-0.046*** (0.01)	-0.046*** (0.01)	-0.046*** (0.01)	-0.046*** (0.01)	-0.045*** (0.01)	-0.045*** (0.01)	-0.046*** (0.01)	-0.046*** (0.01)	-0.046*** (0.01)	-0.046*** (0.01)	-0.045*** (0.01)	-0.044*** (0.01)
Commercial agricultural area	-0.023 (0.01)	-0.023* (0.01)	-0.023* (0.01)	-0.023 (0.01)	-0.022 (0.01)	-0.023 (0.01)	-0.023 (0.01)	-0.024* (0.01)	-0.023* (0.01)	-0.022 (0.01)	-0.022 (0.01)	-0.025* (0.01)

Old-Age Pension in HH*Oldest Age	-0.000 (0.00)		-0.009 (0.01)		-0.066 (0.08)		-0.001 (0.00)		-0.019** (0.01)		-0.128 (0.09)	
Oldest Age Squared		-0.000* (0.00)	-0.000** (0.00)	-0.000*** (0.00)	-0.000*** (0.00)			-0.000 (0.00)	-0.000*** (0.00)	-0.000*** (0.00)	-0.001*** (0.00)	
Old-Age Pension in HH*Oldest Age Squared			0.000 (0.00)		0.001 (0.00)				0.000** (0.00)		0.002* (0.00)	
Oldest Age Cubed				0.000*** (0.00)	0.000*** (0.00)					0.000*** (0.00)	0.000*** (0.00)	
Old-Age Pension in HH*Oldest Cubed					-0.000 (0.00)						-0.000** (0.00)	
Constant	0.141*** (0.02)	0.139*** (0.02)	0.110*** (0.02)	0.074** (0.03)	-0.038 (0.06)	-0.136* (0.08)	0.140*** (0.02)	0.136*** (0.02)	0.110*** (0.03)	0.032 (0.04)	-0.066 (0.06)	-0.389*** (0.13)
R-Squared	0.027	0.027	0.027	0.028	0.028	0.028	0.027	0.027	0.027	0.027	0.028	0.020
N	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248	12 248

Source: GHS 2014. Own Calculations.

Notes: 1. Weighted using household weights. 2. 'Mean years education' is the mean years of education for adult household members. 3. The base area dummy is urban. 4. Province dummies are included but not reported in each regression. 5. Excluded instruments include a) a dummy 'X' for if the oldest household member is over 60; b) Dummy 'X' interacted with the age of the oldest household member; c) Dummy 'X' interacted with the age of the oldest household member squared and d) Dummy 'X' interacted with the age of the oldest household member cubed. Each of the above regressions include the following excluded instruments: (1) a ; (2) a, b ; (3) a (4) a, b, c; (5) a; (6) a, b, c, d; (7) a ; (8) a, b ; (9) a (10) a, b, c; (11) a; (12) a, b, c, d.

# Appendix B: Defining informality in South Africa

## Official datasets

The debate around informality in South Africa is very much alive (see Heintz and Posel, 2008; Yu, 2012). Until 2007, Statistics South Africa (Stats SA) used an enterprise-based definition to define informality in the Labour Force Surveys (LFS), and the October Household Surveys (OHS) before that. This approach relied on enumerators providing a definition of the formal and informal sector, and then asking both the self-employed and employees which sector they perceived themselves to be working in. Heintz and Posel (2008) note that in most of the literature up till 2007, a combination of this self-perception question, and information on whether or not the enterprise that an individual worked for was registered or not, was used to define informality.<sup>12</sup>

Yu (2012) explains that with the introduction of the Quarterly Labour Force Survey (QLFS), Stats SA adopted two new definitions of informality: Firstly, an enterprise-based definition that moved away from the self-perception question, and secondly, an employee-based definition, which is a combination of the enterprise characteristics and employee characteristics. We discuss both of these definitions in greater detail below.

*The informal sector – Stats SA definition A:* The method currently applied by Stats SA uses firm characteristics to determine classification of all employed persons into the formal and informal sectors.<sup>13</sup> The self-employed (employers and own-account workers), and unpaid household workers are all classified as informal if they are not registered for income tax, or not registered for Value Added Tax (VAT). Employees are classified as informal if income tax is not deducted from their salary, and if there are less than five employees at the work place. Therefore, registration for company or individual tax is the main South African classification utilised for defining the informal sector. It is important to note that this definition assigns employees and the self-employed into the formal and informal sector based on the characteristics of the enterprise in which they work – employees in enterprises classified as informal are defined as informal sector employees.

Using this enterprise-based approach the informal sector (including agriculture) comprises 18.3 per cent of total employment in South Africa in quarter two of 2015.

*Informal employment – Stats SA definition B:* In addition to the informal sector enterprise-based definition mentioned above, Stats SA applies an informal employment definition as per the recommendations of the 17th ICLS. As per the enterprise-based definition, the self-employed (employers and own-account workers) in the informal sector, as well as employees employed in informal sector enterprises are counted as being informally employed. So the informal sector definition discussed above remains intact.

However, the employee-based definition departs from the informal sector definition along two dimensions: Firstly, all unpaid household workers who were not defined as informal sector workers previously are now classified as informally employed. Secondly, the employee-based definition identifies informal employment relationships in formal sector enterprises and

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<sup>12</sup> Here 'registered' refers to: a) registered as a company or a close corporation, or b) registered for VAT.

<sup>13</sup> Although Stats SA also has an employee-based definition that measures formal and informal employment, it typically reports statistics pertaining to measures of the formal and informal sectors (i.e. measures derived from the enterprise-based definition).

private households (predominantly domestic workers). The definition found in Stats SA's Guide to the Quarterly Labour Force Survey August 2008 classifies employees in formal sector enterprises and private households as informal, based on three criteria: Firstly, if they are not entitled to medical aid from their employer. Secondly, if there is no employer pension contribution. Thirdly, if there is no written employment contract. An employee is classified as being in a formal employment relationship if s/he responds in the positive to any of these three criteria.

Using this definition, which measures both informal sector employment and informal employment relationships outside of the informal sector, reveals that total informal employment accounts for 31.6 per cent of total employment in South Africa in quarter 2 of 2015 (own calculations, QLFS 2015Q2).

## **Other datasets**

The National Income Dynamics Study (NIDS), a nationally representative panel survey, employs a modified version of the Stats SA definition B in order to examine informal employment in South Africa. This definition moves away from measuring informality using self-perception and combines the enterprise- and employee-based characterisations of informality. The modification of the official Stats SA informality definition is necessary due to constraints within the data, and is outlined below.

### *The informal sector – NIDS definition*

The Stats SA method utilised to classify the self-employed as within the informal sector is preserved using the NIDS data: these workers are all classified as informal if they are not registered for income tax or VAT. Furthermore, all individuals engaged in personal agriculture are assumed to be self-employed in the informal sector. However, we are not able to classify employees as within the informal sector or not as questions surrounding the registration of their workplace for tax were not asked. For this reason, all employees are classified using the informal employment definition below. This means that the informal sector (although not total informal employment) will appear substantially smaller using the NIDS data, when compared with the official definition. As the formal and informal sectors consist only of the self-employed, these workers are termed 'formal self-employed' and 'informal self-employed' in the analysis here.

### *Informal employment – NIDS definition*

Employees with regular work are classified following the official definition based on the following three criteria: firstly, if they are not entitled to medical aid from their employer; secondly, if there is no employer pension contribution; and thirdly, if there is no written employment contract. An employee is classified as being in a formal employment relationship if he or she responds in the positive to any of these three criteria. Employees working in casual jobs or helping in a friend's business are automatically classified as informal employees. This is because there are no identifying criteria to classify these workers as formal or informal and it is assumed that, for the majority at least, this work is characterised by vulnerable working conditions.

The last important deviation from the official definition is in dealing with workers in private households, who are classified outside of the formal/informal definition by Stats SA. In the NIDS data, it was not possible to determine the sector of casual and self-employed workers in Wave 1. For this reason, private household workers are included as formal/informal self-employed or employees, based on the definitions above. As the vast majority of private household workers in South Africa are female and informally employed (as seen in Table 4 using 2012 data), this increases the share of informal employees who are female, when compared with the official definition.

# Appendix C: Evaluation of evidence

Bibliographic Reference	Quality Assessment Indicator							Overall Strength of Evidence
	Defined question?	Transparent on data sources?	Clear design?	Suitable method?	Findings match design?	Findings contextualised?	Logical policy recommendations?	
Golub and Hayat (2014)	M	H	H	H	H	H	H	H
Benjamin and Mbaye(2014)	M	M	H	H	H	H	H	H
Lund (1998)	H	H	H	L	M	M	L	M
Dinkelman and Ranchod (2008)	M	H	H	M	H	M	L	M
Ligthelm (2008)	H	H	H	H	H	M	M	H
Gough (2012)	H	L	L	L	M	M	M	M
Kingdon and Knight (2007)	H	H	M	H	H	M	H	H
Grimm et al. (2012)	M	M	H	H	H	H	H	H
Spiegel (2012)	H	H	H	M	M	L	L	M
Charman, Petersen, Piper (2013)	H	H	M	H	H	M	M	H
Charman and Petersen (2014)	H	H	H	H	H	M	L	H
Charman, Herrick, Petersen (2014)	H	H	M	M	M	M	M	M
Charman et al. (2015)	H	H	H	H	H	H	L	H



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