

# **Double-edged sword: Heterogeneity within the South African informal sector**

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Paper prepared for the ESSA 2013 Biennial Conference, University of the Free State, Bloemfontein, South Africa, 25-27 September 2013

*This version: 31 July 2013*

**JEL codes:** J31, J64, D24

**Keywords:** Job Search; Unemployment; Wage; Production

## **Introduction**

Despite a high unemployment rate and widespread poverty, the South African informal sector is relatively small. This is attributed to a combination of high reservation wages and barriers to entry. While distinguishing between the formal and informal sectors, the current literature on labour market segmentation generally treats the informal sector as a homogeneous entity. In reality, the informally employed consist both of survivalists in the lower-tier, as well as upper-tier workers who intend on transitioning into formal employment.

The paper extends the conventional job-search theoretical model to include the informal sector. At any given point in time, the informal sector is populated by two types of workers. There are inactive job-seekers with insufficient non-wage income who are pushed into informal employment with the expectation of an easier transition into formal employment. The other group consists of active work-seekers who are pulled into the informal sector at adequate levels of capital because their labour market productivity is higher than their home production.

The empirical analysis is based on the Labour Force Surveys from September 2001 to March 2004. This data is used to estimate the effect of human and physical capital on the entrance into the informal sector by using instrumented linear probability models.

The main contribution of this paper is that it provides a theoretically based analysis of informal employment. The theoretical model allows one to distinguish between an increase in informal employment due to enhanced welfare and one that protects the individuals' well-being. The empirical analysis sheds light on the heterogeneity within the informal sector and how the incentives to join this sector vary across individuals.

The first section is the literature review followed by a section that explains the job search model. The third section describes the data and methodology used to obtain the results in the fifth section. The sixth section provides a conclusion for the paper.

## **Literature Review**

The term "informal sector" originates from the work of Hart (1973) in his description of the economic activities of low income earners in Ghana. It includes individuals who used the informal sector as a means of survival as well as workers who viewed it as an opportunity to grow their wealth. The labourers in the informal sector as a means to grow their wealth differ from those found in survival enterprises because more financial and human capital is required before one begins their

type of work. Fields (1990) labelled the enterprises that were started by these entrepreneurs as the “upper-tier informal sector”. This form of employment is expected to award higher earnings than from survivalist “lower-tier” enterprises. Empirical studies suggest that the earnings from this segment are comparable to formal sector wages (Blunch, Canagarajah and Raju, 2001).

Weeks (1975) proposed three major advantages to a developing country having a growing informal sector. One is that the sector produces goods that are consumed by the lower income earners in the population. Second, a growth in the informal sector (relative to the formal sector) would result in a shift towards more labour intensive economic activities. Thirdly, workshops may provide the source for a local capital goods industry and provide training to local entrepreneurs.

In the South African case the advantages that Weeks mentions are not substantial. The formal sector producers dominate the economy and consumption baskets across income classes (Valodia, 2013) therefore the consumption benefits to lower income earners is dampened. Another distinguishing characteristic of the informal sector is that manufacturing is underdeveloped. The combination of the low demand for informal goods and services and low productivity suggest that the current informal sector activities do not generate enough earnings to attract the unemployed.

### **Data description**

The Labour Force Survey (LFS) is a rotating panel dataset that is collected biannually in March and September by Statistics South Africa (StatsSA). The data used in the paper is for the period between September 2001 and March 2004 and is restricted to black women so as to avoid race and gender related differences.

Workers are informal labourers if they answer an explicit question about whether their main activities are in the sector. Several complimentary questions were asked in order to verify that the respondent is employed in the informal sector such as, inter alia, the size of the business and whether the business was registered.

StatsSA classifies a person as unemployed if s/he has not had a job seven days prior to the survey interview and s/he is available to start working within two weeks. A distinction is made between the active and inactive job seekers based on whether they have taken steps to find employment within four weeks prior to the interview (Statistics South Africa, 2002).

A transition matrix of labour market outcomes shows that there are low probabilities of entry into and high probabilities of exit from informal sector employment. Active job seekers have a higher probability of finding a job in the formal sector whereas the inactive are more likely to be employed

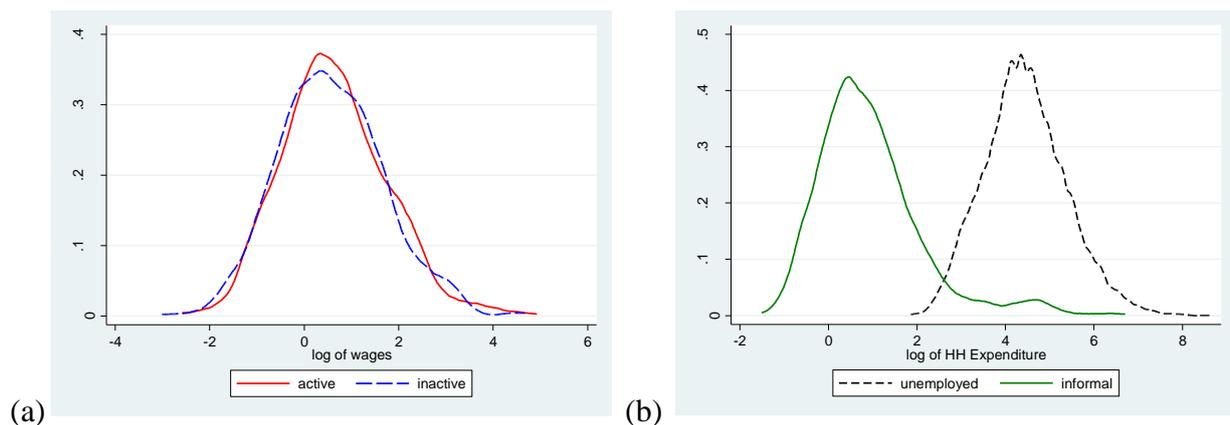
in the informal sector. Of the informal sector entrants, active job seekers have the largest share followed by the inactive.

Table 1: Transition matrix of labour market outcomes

	active	inactive	informal	formal	Total
active	56.69 (58.48)	27.45 (35.50)	7.05 (18.84)	8.81 (9.65)	100
inactive	35.33 (27.45)	52.76 (51.40)	7.14 (14.10)	4.77 (3.93)	100
informal	16.82 (6.62)	15.02 (7.41)	56.81 (56.81)	11.35 (4.74)	100
formal	8.00 (7.45)	4.87 (5.68)	4.49 (10.61)	82.64 (81.68)	100
Total	(100)	(100)	(100)	(100)	

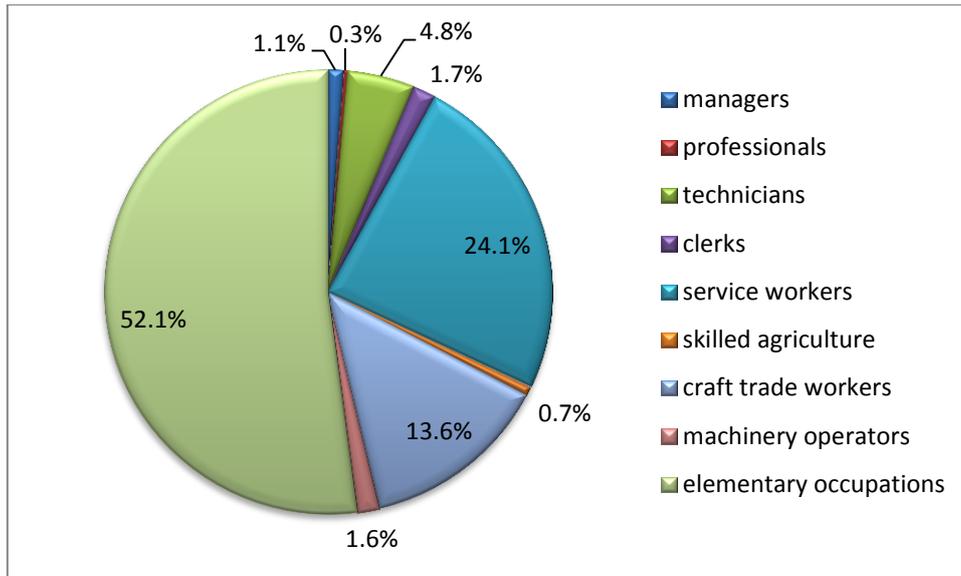
The low informal sector entrance rates may be due to the informal sector’s status of “employer of last resort”. Kernel densities of logged per capita household expenditure illustrate that the people in the informal sector have lower levels consumption than the broadly unemployed. Added to that, the income opportunities available to the people in the informal sector do not match the consumption levels of the unemployed.

Figure 1: Kernel densities of (a) informal sector income and (b) per capita household expenditure



The informal sector is dominated by elementary occupations, service worker, and crafts and related trade. These activities are usually part of the lowest value and poorest in quality segments of the small scale retail and manufacturing industries. The informal traders tend to setup shop close to formal retailers, transport routes and taxi ranks, and are normally found in clusters of traders with similar products (Valodia et. al. 2005).

Figure 2: Pie chart of informal sector by occupation



### The job search model

The basic model describes the actions of a utility maximising job seeker. During their search the job offers arrive at a rate  $(\lambda^I, \lambda^F)$ <sup>1</sup> that follows the Poisson distribution with income opportunities represented by wages  $(w^I, w^F)$ . Wages are random variables drawn from an  $H(\cdot)$  distribution. The individual chooses between three mutually exclusive states: unemployment, and employment in the informal or formal sector. This decision is based on the value  $(V_u, V_e^I, V_e^F)$ , which is an increasing function of the wages received from that sector, attached to the different states. The subjective preference rate is equal to the real interest rate  $r$  and the individual exits employment at a rate  $(q^I, q^F)$ .

The value that is attached to employment in the informal sector in one period depends on the wages as well as the change in utility associated with an exit from employment.

$$rV_e^I(w^I) = w^I + q^I [V_u - V_e^I(w^I)]$$

This expression may be rewritten in terms of wages and the reservation wage ( $x$ ). The reservation wage serves as the lowest bound for wages that an individual would be willing to accept and may be measured as the one period utility of unemployment i.e.  $x = rV_u$ . The utility gained from working in the informal sector is equivalent to the discounted<sup>2</sup> value of one period's wages augmented by the reservation wage that the individual may exit with.

<sup>1</sup> Superscript I and F denote the informal and formal sector respectively and the job arrival rates are independent

<sup>2</sup>  $r + q^I = (1 + r) - (1 - q^I) \equiv$  accumulation factor less the probability of remaining in job

$$rV_e^I(w^I) = \frac{1}{r+q^I} (rw^I + q^I x)$$

The utility associated with unemployment in one period consists of the non-wage income from home production augmented by the increase in utility due to employment in the formal or informal sector<sup>3</sup> if the wage offer is higher than the reservation wage<sup>4</sup>.

$$rV_u = z + \lambda^F \overline{H^F(x)} [V_e^F(w^F) - V_u] + \lambda^I \overline{H^I(x)} [V_e^I(w^I) - V_u]$$

The values of employment and unemployment may be used to construct an expression of the reservation wage in terms of the incomes earned in the different states.

$$x = \alpha z + \alpha^F w^F + \alpha^I w^I \quad \text{where} \quad \alpha > 0, \alpha^F > 0, \alpha^I > 0$$

The non-wage income is determined by a vector of household production variables (**HP**). An individual's capacity for this production is determined by (inter alia) the type of dwelling as well as the household structure reflected by the number of children, elderly, and household size. Employment in the formal sector is determined by a vector of human capital variables (**HC**) whereas self-employment in the informal sector requires physical capital (PC). The reservation wage is determined by the following equations:

$$w^I = \theta_0^I + \theta_1^I \text{PC} + \theta_2^I \text{HC} + u_F$$

$$w^F = \theta_0^F + \theta_2^F \text{HC} + u_I$$

$$z = \theta_0^H + \theta_3^H \text{HP} + u_H$$

The decision to enter the informal sector is based on a latent variable which represents the additional income from accepting remuneration that is higher than the reservation wage. Employment in the informal sector is determined by the structural equation:

$$y_I^* = (\theta_0^I - \varphi_0) + (\theta_1^I - \varphi_1) \text{PC} + (\theta_2^I - \varphi_2) \text{HC} - \varphi_3 \text{HP} + \varepsilon_I$$

From the latent variable equation one is able to observe the income opportunity, or potential wage, ( $\theta_k^I$ ) and reservation wage ( $\varphi_k$ ) effects for an individual who must make a choice between employment in the informal sector and home production.

<sup>3</sup> Assume wage offers do not arrive simultaneously

<sup>4</sup>  $\lambda^F \overline{H^F(x)} \equiv$  probability that the wage offer is higher than the reservation wage

## Methodology

A growth in the informal sector caused by a transition from broad unemployment has different implications for their economic well-being. Entry into the informal sector is motivated by either fortune or distress. Distress is demonstrated when a decrease in the welfare of an individual lowers the reservation wage more than the reduction in the potential wage causing them to accept the job offer. Employment motivated by fortune occurs when a gain in welfare raises the potential wage to higher levels than the increased reservation wage.

The reduced form of the structural equation is used for the empirical analysis and will aid the comparison of how the potential and reservation wage factor into the decisions of active and inactive job seekers. The degree of welfare that is maintained by individuals is measured by the physical and human capital variables. The set of human capital variables are education, experience, and the number of employed household members. The reason why the number of employed people is considered a part of human capital instead of household production variables is because it is an indication of the individual's access to social networks that bring economic returns.

An individual's physical capital endowment is not observable in the data available which creates an omitted variable bias in the empirical analysis. The multiple indicator instrumental variable (IV) solution militates against this source of endogeneity. Two variables are used as indicators of physical capital, namely household expenditure and old age pension grant.<sup>5</sup> For validity, each of the indicators must be correlated with physical capital and should only be correlated with each other through their common dependence on capital, if they are to be used as instruments (Wooldridge p106). The old age pension grant is given on the basis of a means test and its value is determined by the South African government therefore it is a valid indicator that may be used as an instrument for household expenditure.

In order to distinguish between upper- and lower-tier informal sector activity regressions are run on the probability of formal versus informal sector employment. The key components of these regressions are the previous labour market status and their interactions with the physical capital indicator. The interacted variables are subject to the same source of endogeneity as household expenditure and are treated with the same instrumental variable.

A further source of endogeneity is the presence of individual effects that are correlated with the explanatory variables. The null of absence of this unobserved component is rejected only for inactive job seekers therefore fixed effects IV regression is used to estimate their results. Random

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<sup>5</sup> Household expenditure and old age pension grant are per capita logged variables

effects estimation is used for active job seekers with controls for time invariant variables such as province, rural, and household head<sup>6</sup>.

## **Results**

### *Entrance into informal sector*

Active job seekers are pulled into the informal sector<sup>7</sup> by fortune whereas inactive job seekers are pushed into the informal sector by distress. This is illustrated by empirical evidence which shows that active job seekers who possess more physical capital and higher levels of education are more likely to find work in the informal sector. Entry into the sector for an inactive job seeker is more likely if they have less physical capital and have lower levels of education.

The composition of the working age members of the household sheds light on the role that social networks play in finding employment. Equations (1) and (2) distinguish between working age household members who are employed and those who are not employed. The income opportunities that arrive for women who live with employed people are higher than the reservation wage associated with having more members. Additional non-participants or unemployed members do not help to transfer the income opportunities but do increase the reservation wage. In this way a women who live with employed people is more likely to find employment in the formal sector regardless of whether they are active or inactive job seekers.

The household production variables aid in the identification of the likely movements of the reservation wage for the two types of unemployed women. For example, living in a formal dwelling decreases the probability of informal sector employment because this type of dwelling is associated with a higher reservation wage.

The reservation wage for broadly unemployed women is higher when there are younger children in the household. An inactive seeker with younger children is more likely to invest more time in home production and is more likely to enter the informal sector when the children are older. An active seeker, on the other hand, will enter the informal sector when they have children. The probability of this entry is higher when the children are older.

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<sup>6</sup> Coefficients for these variables are not shown in regression table

<sup>7</sup> Refers to small scale retail and crafts manufacturing

### *Upper- and lower-tier informal sector*<sup>8</sup>

The ability to make the transition into the formal sector distinguishes between those who have been pulled into the upper- or pushed into the lower-tier of the informal sector. The assumption that is made is that the preferred sector is formal. The individual bases their choice of which sector to enter now on how it will affect their probability of entering the formal sector in the next period.

Informal workers with very little capital are less likely to move to the formal sector in the next period than if they are active job seekers. Additional capital allows these workers to be more likely to change to formal employment. This means that poor active job seekers have a better chance of obtaining formal employment from outside of the informal sector which sheds light on the combination of the widespread poverty, open unemployment, and the small informal sector.

Informal sector labourers are more likely to shift their employment status to formal, compared to inactive job seekers, when their access to physical capital is low. At larger amounts of physical capital the informally employed are less likely to move to formal employment than inactive job seekers. This explains why the inactive job seekers are “pushed” into informal employment. The prospects of entering the formal sector are higher for the inactive when they are outside of the informal sector if they are not impoverished.

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<sup>8</sup> Upper-tier workers are more likely to transition into the formal sector and lower-tier workers are more likely to remain in the survival enterprises.

Linear probability models of informal sector employment

	(1) active	(2) inactive	(3) formal	(4) formal
Log HH Expenditure	0.044 (0.041)	-0.094* (0.049)		
Inf/Active(-1)			-0.009 (0.162)	
Inf/Active(-1)* Expenditure			0.019 (0.225)	
Inf/Inactive(-1)				0.022 (0.139)
Inf/Inactive(-1)* Expenditure				-0.149 (0.333)
Education	0.012** (0.006)	-0.007 (0.015)	0.007 (0.030)	0.014 (0.040)
Education squared	-0.001 (0.000)	0.000 (0.001)	0.001 (0.002)	-0.000 (0.002)
Experience	0.011*** (0.002)	0.003 (0.002)	0.007 (0.009)	0.004 (0.007)
Dwelling type	-0.019 (0.014)	-0.026 (0.040)	0.100 (0.084)	0.043 (0.112)
Married	0.055*** (0.016)	0.011 (0.043)	-0.082 (0.178)	0.142 (0.313)
Number of Elderly	-0.011 (0.010)	0.003 (0.042)	-0.015 (0.144)	-0.089 (0.228)
Number of children age 0-5	0.001 (0.006)	-0.012 (0.012)		
Number of children age 6-12	0.017** (0.008)	0.008 (0.011)		
Number of Employed	0.167*** (0.015)	0.141*** (0.023)		
Not Employed	-0.032*** (0.003)	-0.024** (0.011)		
Number of children			-0.012 (0.064)	-0.021 (0.086)
HH members (working age)			0.013 (0.030)	-0.027 (0.030)
observations	3910	3740	1874	1449
groups	3467	3339	1718	1310

Standard Errors in parentheses

Dwelling type: 0 informal, 1 formal

Inf/Active(-1): 0 active 1 informal

Inf/Inactive(-1): 0 inactive 1 informal

Equations (3 and (4) are LPMs with dependent variable: 0 informal, 1 formal

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01

## Conclusion

The South African informal sector is dominated by small scale retail and crafts manufacturing for black women which provides low potential wages. The lack of adequate income opportunities means that it is an undesirable choice of employment when it is compared to the formal sector. This paper has attempted to find the role that physical capital endowment as incentives for entering the sector for both active and inactive job seekers.

Active job seekers are pulled into the upper-tier of the informal sector when they have access to physical capital that allows them to earn adequate levels of income. It is also easier to shift their employment to the formal sector when they have larger physical and human capital endowments. Poorer seekers do not have adequate income opportunities in the informal sector and their probability of making the transition to the formal sector from the informal sector is low. This may be the reason why active job seekers choose to remain unemployed while they search for formal sector work.

Inactive job seekers are pushed into the lower tier of the informal sector when their access to physical access is low and can no longer afford unemployment. The inactive job seekers who are well off have a better chance of moving into formal employment. Their actions follow the behaviour described in the Harris-Todaro model.

The wages earned by black women in the informal sector are similar for individuals who were either active or inactive job-seekers. The heterogeneity within the sector is due to the different incentives that the two types of individuals face upon entrance.

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