

The economics of urban waste picking in Pretoria

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Abstract

Debates on the role of the informality in the economic transformation of urban economies in Africa remain fraught: is informality benign or malign? Does it evolve to formality or remain as a permanent feature of capitalist urban development? Are the motives of informal actors calculated or imposed by economic circumstances? Pretoria in South Africa has become well known for such informal economic activities, and therefore its experiences can help to address these questions. In doing so, this paper analyses the impact of informal recycling on the poverty levels of street waste-pickers in South Africa. A mixed-method approach informed the results. Interviews were conducted with 142 street waste-pickers. The results show that, due to high unemployment in South Africa, many semi-skilled and unskilled workers enter the informal economy and perform survivalist-type work. The income from waste-picking is insufficient to lift them out of poverty due to the complex multidimensionality of poverty such as low skills, education, limited resources, safety nets and dependents who live from the limited income. Concerted inclusive policy decisions need to be taken to embrace waste-pickers in the formal waste system. Despite difficult conditions, some waste-pickers display a remarkable degree of entrepreneurial resilience and pride at being able to independently make an honest living. These experiences show that urban economics cannot view the informal economy as counter-cyclical to economic growth and therefore temporary in nature. The informal economic activity of waste-picking is indeed a form of living, permanent and vulnerable at the same time. In formulating policy dealing with informality, urban economics would be well served to also look at other schools

of thought for inspiration combined with the voices of those involved in this form of living.

Keywords: Urban informal economy; recycling; street waste-pickers; poverty; waste management system; urban economics.

1. Introduction and aim of the study

In 2019, South Africa celebrated 25 years of inclusive democracy. Despite progress on the economic development front since the first democratic elections in 1994, South Africa still faces the ‘trilemma’ of widespread inequality, poverty and unemployment (May, 2016).

In fact, recent announcements from Statistics South Africa suggest that since 2010 the number of South Africans living in poverty is on the increase. Statistician-General Pali Lehohla remarked in February 2015 that: “*In 2010, 20% of South Africa’s population fell below the poverty line... This had increased to 21.5% by 2014*” (City Press, 2015:1). With declining opportunities in the formal economy, the informal economy has become a major employer (van Heerden, 2015; Theodore *et al.*, 2015). Grant (2010:600) specifically mentions the impact of high population growth in townships on the one hand, as well as the role played by international immigrants in increasing the competition for poorly paid service jobs. This led to the emergence of a new world of work operating informally and mostly under the radar (Grant, 2010:600).

The mechanisms for the creation, evolution, or maintenance of the informal economy are vigorously debated. The so-called Dualists and Structuralists form the two polarised views in terms of the discourse (Obeng-Odoom, 2011; Ojong, 2011). Dualists typically argue that the informal economy develops in times of economic stagnation. In times of slow economic activity, there is an added worker effect in the informal economy as people attempt to earn and/or supplement their income. Here, they engage in a diverse range of activities. The common denominator is that workers in the informal economy mostly work without secure employment contracts, worker benefits, or social protection (Bob-Milliar and Obeng-Odoom, 2011). The implication of the Dualists’ explanation is that when the economy grows, people will leave the informal economy again (Obeng-Odoom, 2011; Ojong, 2011). The informal economy is, therefore, temporary and moves counter-cyclical with economic growth (Obeng-Odoom, 2011; Ojong, 2011). Structuralists agree that the informal economy supports the livelihood of its participants (Obeng-Odoom, 2011).

The point of contention is that Structuralists do not view the informal economy as temporary, but sees informal work is an integral part of the capitalist society (Obeng-Odoom, 2011). Furthermore, Structuralists argue that the relationship between economic growth within a capitalist society is pro-cyclical, in that it leads to an expanding informal economy as the informal economy provides cheap labour and other resources for the accumulation of capital in the formal economy (Obeng-Odoom, 2011). The different views in the debate inform contrasting policy suggestions for dealing/or not with the notion of informality. Bob-Milliar and Obeng-Odoom (2011) convincingly argue that, in terms of policy, a common problem in studying the informal economy in urban economics is the misunderstanding of local knowledge of the nature of informality. Millar (2018) goes further and argues that as far as waste-picking is concerned, it can be useful to move away from the concept of formal versus informal (Millar, 2018:9). She argues in favour of the rethinking of this informal activity as a form of living (Millar, 2018:9).

This article attempts to give further impetus to this call and investigates the lives and livelihoods of waste-pickers in Pretoria as a way of living, but also to add local knowledge and context to the ongoing debate on the permanency and constructs of the informal economy in the field of urban economics. The article contributes to the body of literature and, following Grant (2010), we use “the voices from below”, in this case the voice of those at the bottom of the waste value chain. In doing so, we evaluate the assumptions and debates on informality in urban economics from a South African urban economic perspective.

The South African urban economic landscape is characterised by increasing poverty levels and high and rising levels of unemployment. High unemployment implies that fewer low-skilled and unskilled jobs are available in the formal labour market. The Dualist argument suggests that as a result many unemployed people in South Africa would venture into the informal economy in an attempt to provide in their basic needs as a temporary refuge against formal unemployment. The Structuralists would argue against the temporary nature of the expanding informal economy (Obeng-Odoom, 2011; Ojong, 2011). In the first quarter of 2019, 13.04% of the total labour force was active in the non-agricultural informal sector. This equates to 18% of the total number of employed people in South Africa (Statistics South Africa, 2019). Once in the informal economy, they make a living by engaging in various lower-tier informal economic activities. Car guarding, day labouring, small-scale retailing as well as waste-picking on the streets are everyday sights across South African cities. Pretoria is no exception,

having attracted large numbers of street waste-pickers who are regularly seen pushing their trolleys across the urban sprawl (Schenck and Blaauw, 2011a; 2011b).

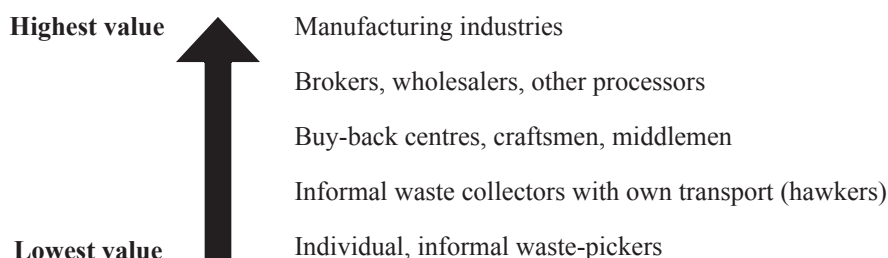
The literature generally defines waste-pickers as small-scale, self-employed people who are mostly active in the urban informal economy (Hayami *et al.*, 2006; Schenck and Blaauw, 2011b). Various terms are used to describe the activities of waste-pickers, including reclaimers, garbage pickers, recyclers, scavengers and waste salvagers (Schenck and Blaauw, 2011b; Chvatal, 2010; Samson, 2010b). In Cape Town, for example, waste-pickers have referred to their work as “skarreling”, “grab grab”, “mining” and “minza” (meaning “trying to survive”) or “ukuzizamela” (trying for yourself) (Benson and Vanqa-Mgijima, 2010; van Heerden, 2015). In Soweto, they refer to themselves as “reclaimers” as they reclaim material that has been discarded (Samson, 2015). In Brazil, the “catadores” or collectors involved in this activity prefer to be called “collectors of recyclable material” rather than “garbage collectors” (Millar, 2008; 2018). The obvious entrepreneurial zeal that prompted these comments is a poignant reminder that even in the face of much adversity, some individuals are still imbued with a desire to make an honest living (van Heerden, 2015).

The different terminology that is encountered is not simply a matter of academic interest (Samson, 2010a). It also helps to shape attitudes towards and perceptions about the people involved in this activity (Samson, 2010a; Schenck and Blaauw, 2011a). The question as to what term to use deserves careful consideration. Men and women who collect and sell discarded recyclable materials often do not see themselves as collecting “waste.” The argument is that “waste” refers to what no longer has value. Recyclables such as paper, plastics, scrap metal, etc. can be resold and therefore can be regarded as valuable “material” rather than waste (Samson, 2015). The option of referring to “self-employed recyclers” is therefore widely used in the literature. In this paper, we use the term ‘waste-picker’ because it is the term used by the South African Waste-pickers Association (SAWPA) since its inception in 2009. The aim of SAWPA is to “Improve livelihoods, recycling, recognition of waste-pickers, promote the rights of waste-pickers...” (Global Alliance of Waste-pickers, undated). The term ‘waste-picker’ is also used as part of a global alliance of waste-pickers around the world – which serves as additional justification.

Irrespective of the terminology used, the *de facto* situation is that informal recycling of various forms of plastic, glass, paper and metals is one of the ways in which many of the unemployed carve out a living in difficult socio-economic

circumstances. It has been suggested that there were approximately 62 147 waste-pickers in South Africa in 2014, with an estimated 36 680 operating from landfills and 25 467 operating as trolley pushers (Khabokedi Waste Management, 2014). This figure represented 0.31% of the total labour force, 0.17% of the working age population and 2.55% of those working in the informal sector in 2014 (Statistics South Africa, 2015b). Other estimates range between 60 000 and 90 000 people, with some as high as 215 000 (Godfrey *et al.*, 2016).

FIGURE 1: HIERARCHY OF ROLE PLAYERS IN THE RECYCLING BUSINESS



Source: Wilson *et al.* (2006:800)

Street waste-pickers find themselves at the start of a long value chain in the recycling industry (Figure 1). The recycling value chain links the production of post-consumer waste to its collection, sorting and transportation, and processing. Only then does it become an input in a new production process. Value is created at each stage. In general, the further away the actors in the value chain are from the production of post-consumer waste, the greater is their ability to extract value from it (Viljoen *et al.*, 2012; Schenck *et al.*, 2016). The street waste-pickers therefore find themselves in a perilous position. Their income is based directly on their effort. However, exogenous factors such as the local availability of recyclable materials, global fluctuations in the commodity price of the materials they collect and even the weather are all forces that affect their livelihoods, but over which they have no control. Furthermore, with no means to transport recyclable material to end-users, they have no option but to deal with buy-back centres (middlemen) further along the value chain. Waste-pickers' dependence on middlemen and the uncertainty surrounding collections and prices translate into fluctuating earnings.

Uncertainty in earnings is a key element in understanding the poverty position of street waste-pickers. However, compared with other stakeholders, they face the most uncertainty; their position in the recycling value chain is indispensable given the amount of waste-produced in South Africa every day.

This informs the overall research aim of this research article, namely the impact of informal recycling on the poverty status of street waste-pickers in South Africa, using Pretoria (the capital city) as a case study. The research builds on the previous work of Schenck and Blaauw (2011a; 2011b), who conducted a city-wide case study of street waste-pickers in Pretoria in 2010. Following on the exploratory qualitative work of Schenck and Blaauw (2011a) conducted in 2009, Schenck and Blaauw compiled a comprehensive dataset on the activities of street waste-pickers through the first empirical micro-survey of waste-pickers in South Africa's capital in 2010. They used the data to establish a broad socio-economic profile of street waste-pickers in Pretoria, published in the Schenck and Blaauw (2011b) paper. The hitherto unused section of the data allows for an in-depth analysis of the poverty-related aspects of the lives of street waste-pickers in Pretoria.

The specific research question of this article therefore is: What is the impact of the waste-pickers' informal activities on their poverty status? We argue that studying how informal recycling impacts the poverty levels of street waste-pickers in South Africa is fundamental to gaining an understanding of the value chain underpinning the recycling industry and the role of waste-pickers. The results indicate that informal recycling does present an opportunity for an individual person to live above different measures of poverty. However, if the number of dependents is included in the analysis, this changes completely, with more than 88% of the sample living below the lower bounds poverty line used in the analysis. The results reflect the complex multidimensional nature of poverty in South Africa and the permanent nature of the urban informal economy in South Africa. This furthermore contradicts the premise of being temporary found in the dualist school of thought in urban economics.

This paper commences with an appropriate theoretical framework to assist in the analysis of the study. Next is an overview of the general South African context of informal waste recycling, followed by a summary of the demographic profile of waste-pickers as published by Schenck and Blaauw (2011b) and the methodology used by them in 2010 to obtain the data. This is followed by an empirical analysis using the unused data of their 2010 survey and the results and discussion thereof. The paper concludes with appropriate implications of practice and policy.

2. The informal sector and waste-picking: A theoretical framework

The informal economy across the world is receiving renewed interest (Chen, 2012). Chen (2012) identified two reasons for this. Firstly, the informal economy

has not only grown worldwide, it also emerged in new guises and in unexpected places (Chen, 2012:3). Secondly, this renewed interest flows from the realisation that the informal economy today is intrinsically linked to the formal economy. In fact, as shown by Obeng-Odoom (2016:109), there are several interconnections between diverse informal economic activities, e.g. waste-pickers selling their collected recyclables to other informal agents, who then sell the stock they bought to formal companies (Obeng-Odoom, 2014:130). As a result, the support of working poor in the informal economy is a key avenue to reduce poverty and inequality (Chen, 2012:3).

The first reason mentioned by Chen (2012) resonates with the fact that informal economies in cities are seldom studied in mainstream urban economics (Obeng-Odoom, 2016:107). The fact that the informal economy worldwide has grown and diversified (Chen, 2012) is in stark contrast to the narrow understanding of the broader urban economy and its claim that informal economies are temporary and will shrink or even disappear altogether as a result of increasing trade, limited unionisation and government regulation, and, most importantly, sustained urban economic growth (Obeng-Odoom, 2016:107). Chen's second argument is a similarly credible one and also contradicts the often accepted dualist framework of an informal economy (or second economy) that is mostly disconnected from the so-called first or formal economy (Frye, 2007; Du Toit and Neves, 2007).

Over the past decades, different theories regarding informality have come to the fore. On the one hand, many neoclassical urban economists see the informal economy as consisting of informal entrepreneurs who choose to work informally (Maloney, 2004; Chen, 2012). According to Obeng-Odoom (2016:117), New institutional economists such as Hernando de Soto and Douglas North are part of this broader legalist school. Their view centres on the notion that people in the informal economy would actually prefer a formal working dispensation, but are discouraged by the cost of doing business (Obeng-Odoom, 2016:117). De Soto (2000), for example, suggests that those entrepreneurs (particularly if they have property rights) will opt against the informal economy if more business friendly regulations are in place and their property rights are both formalised and tradable (Obeng-Odoom, 2016:117).

Other economists focus on the counter-cyclical nature of informal employment, suggesting that necessity (apart from choice) gives rise to informality. Others, notably Marxist economists, point towards the informalisation of employment relations as a feature of contemporary economic labour relations in many

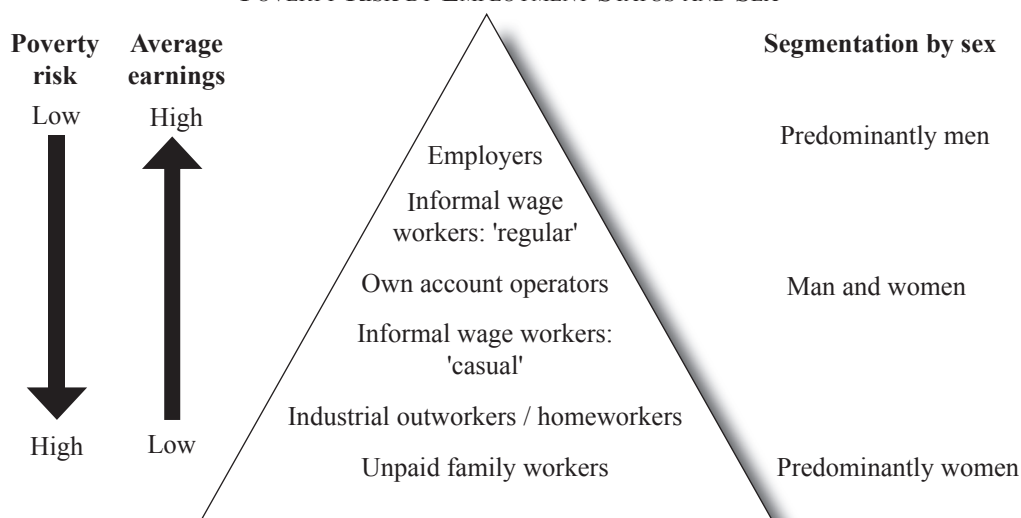
countries (Chen, 2012; Theodore *et al.*, 2015). Structuralists, such as Castells and Portes (1989), argue that informality was incorporated in the broader capitalist economy as a relationship of exploitation (Obeng-Odoom, 2011:365; Millar, 2018:129). The informal economy absorbs surplus labour, reduces the cost of labour and also provides cheap goods and services to the formally employed (subsidising wages in the process (Obeng-Odoom, 2011:365; Millar, 2018:129).

Obeng-Odoom (2014; 2018) presents two case studies where recycling models are mainly informalised. He argues that both in Sekondi-Takoradi (Ghana) and in Abidjan (Cote d'Ivoire) the observed informal recycling activities are the result of the neo-liberal marketisation of the environment (Obeng-Odoom, 2014; 2018). As a result, the system provides some employment to the poor, but faces similar problems to many other informal enterprises, e.g. financial difficulties, health issues and strained relations with authorities (Obeng-Odoom, 2014; 2018). Obeng-Odoom (2016, p.117) further reflects on the work of Davis (2006), emphasising the structural roots of informality. Its temporary nature as propagated by the dualist, legalist and neo-structuralist frameworks is disputed as informality is a core feature of modern urban capitalism (Obeng-Odoom, 2016, p.117).

According to Chen (2012), there is also increasing appreciation that different issues drive different segments of the informal economy. As a result, several models have recently been developed in an attempt to capture the components of informality (Chen, 2012). One example of this refined categorisation is presented by Charmes (2012). Jacques Charmes is regarded as an authority on the classification and measurement of informal economic activity (Obeng-Odoom, 2016:111). Charmes (2012:104) argues that the informal economy includes employment in the informal economy and informal employment in the formal economy (workers who are not protected by law as well as domestic workers in households) (Obeng-Odoom, 2016:111).

The one found most suitable for this study is a multi-segmented model of informal employment defined in terms of statuses in employment. This model was developed and tested by the global action-research-policy network called Women in Informal Employment: Globalizing and Organizing (WIEGO) (Chen, 2012:8). This model is depicted in Figure 2 below.

FIGURE 2: WIEGO MODEL OF INFORMAL EMPLOYMENT: HIERARCHY OF EARNINGS AND POVERTY RISK BY EMPLOYMENT STATUS AND SEX



Source: Chen (2012:9)

WIEGO argued that two additional categories need to be added to the five main categories of the International Classification of Status in Employment. These are casual day labourers and industrial outworkers or subcontracted workers¹. The WIEGO model therefore features six categories. These are: informal employers, informal employees, own account operators, casual wage workers, industrial outworkers or subcontracted workers, and unpaid but contributing family workers (Chen, 2012:8-9). The model suggests that average earnings will decrease and the risk of being from a poor household will increase as workers moved down the employment statuses in the WIEGO model (Chen, 2012:8-9).

Waste-pickers will generally fall under the category of own account operators. Their income depends largely on the volume of recyclable material that they can collect (Viljoen *et al.*, 2016). They furthermore face significant risk as their livelihoods can be negatively affected by exogenous events such as illness and even the unintended consequences of management practices at landfill sites (Schenck *et al.*, 2019). We argue, therefore, that this theoretical framework serves as an appropriate point of departure to analyse the impact of the waste-pickers' informal activities on their poverty status. In order to achieve that, the next section investigates the South African context of informal waste-picking.

¹ For a detailed discussion of the seven categories, see Chen (2012:8-10).

3. The South African context of informal waste-picking

South Africa has a long history of people collecting waste from the streets as a means of generating an income (Benson and Vanqa-Mgijima, 2010:2). The opportunities for poor people to participate in the recycling chain as well as the scale of private reclaiming have increased since the adoption of neo-liberal policies in South Africa (Benson and Vanqa-Mgijima, 2010; van Heerden, 2015). Medina (2007) and Theron (2010) confirm that collecting and selling recyclable waste is an activity that protects many people from starvation. The existence of waste-pickers should be considered further within the context of existing formal waste management systems as the different management practices of local municipalities directly influence the ability of the waste-pickers to go about their daily endeavours (Schenck and Blaauw, 2011a; 2011b; Schenck *et al.*, 2016).

The literature suggests that the official waste management systems in many cities, such as Cairo, could not be managed without the countless waste-pickers and scrap collectors. These people often form the centre of waste collection services at no cost to central governments, local authorities or residents (Gerdes and Gunsilius, 2010). Dias (2009) states, for example, that 5 100 tons of waste were collected by informal waste-pickers in the streets and dumpsites in Belo Horizonte, Brazil in 2008. This equated to 52% of all recyclable material accumulated. Clearly, street waste-pickers make a significant contribution to national economies as they “...are entrepreneurs who add value merely by collecting and then transforming waste into tradable commodities” (Gerdes and Gunsilius, 2010:5). South Africa’s municipal waste management systems, however, are seemingly struggling to integrate the waste-pickers on the streets and landfill sites (Schenck and Blaauw, 2011b).

The World Bank (2016) reported in 2016 that South Africa produces 54 425 tonnes of waste daily. This is the 15th highest rate in the world in absolute terms and the 38th highest in per capita (the amount produced per household every day, equating to two kilograms) terms (World Bank, 2016). In the larger Tshwane area (under which Pretoria falls), the actual annual volume of waste disposed of in 2011 at landfills in Tshwane (excluding Metsweding) was estimated at 1 443 290m³ (City of Tshwane, 2014). According to the Tshwane Metro, 82% of Tshwane citizens had access to official waste removal in 2011 (City of Tshwane, 2014). With recycling activities in the Metro stuck at pilot phase levels, the waste-pickers have a role to play in diverting recyclables from the landfills and in doing so extending the lifespan of the landfills. However, the Metro does

not seem to be successful in integrating waste-pickers in their formal waste management strategy.

The inability of the South African local authorities to effectively acknowledge and engage with waste-pickers regarding, for example, future changes to the recycling system, has appropriately been called into question by researchers such as van Heerden (2015). The stance of many municipalities flies in the face of the current trend towards participatory governance, which is supposed to inform public sector planning and policy-making in South Africa (van Heerden, 2015). More specifically, it neglects the principle of “...*participatory democracy, accountability, transparency, and public involvement...*”, which is enshrined in both the Constitution of the Republic of South Africa and in national and local waste management policies, including the National Waste Management Strategy (NWMS) (van Heerden, 2015:11).

Not only local political factors influence waste-pickers’ livelihoods. Socio-economic forces at a global and local level also shape the nature of informal waste management and the livelihoods of those engaged in it, however tenuously (van Heerden, 2015). Marelllo and Helwege (2014) showed that, in Latin America, the number of waste-pickers surged as more pressure was exerted on formal labour markets. The same trend emerged in South Africa in an environment of persistently high unemployment. This was accompanied by a decrease in individual waste-picker earnings (van Heerden, 2015). For example, Benson and Vanqa-Mgijima (2010) described how the 2008 global economic recession had similar consequences for waste-pickers in Cape Town.

Apart from global and local factors that directly affect the lives of street waste-pickers, several other barriers prevent waste-pickers from improving their socio-economic circumstances (Viljoen *et al.*, 2016, Megbowon, 2018). Low levels of education, inadequate language proficiency, unreliable and low levels of income, and limited access to basic social services are all barriers preventing waste-pickers from moving upwards in the hierarchy of the informal economy (Viljoen *et al.*, 2016). Waste-pickers operate under a unique set of socio-economic circumstances. Therefore, designing policy interventions to address the inadequate response to their plight is challenging, requiring an in-depth knowledge of the prevailing conditions confronting waste-pickers on South Africa’s streets and landfill sites, and forms the backdrop and context of this study.

4. Literature review on the informal economy and waste-pickers in South Africa

Scholars such as Chen (2012) and Rogerson (2007; 2016) often mention an international resurgence of scholarly endeavour around issues of (urban) informality and the informal economy. One of the reasons postulated for this is the evidence indicating that the mainstream prediction of a disappearing informal economy did not materialise (Rogerson, 2007; 2016). Instead, it has expanded massively on a global basis, often in new guises and in unforeseen places such as the streets of developed countries (Rogerson, 2007; 2016). The new trend of informal economy research been accompanied by an expansion of the informal sector concept (Chen, 2012; Rogerson, 2007; 2016). Contemplating the informal economy in the past often focused on firms (Grant, 2010). Grant (2010:2013) states that the full scope and range of economic activities in the informal economy (including non-firm worlds of work and their spatiality) are not adequately understood. Grant argues convincingly that a more finely tuned conceptualisation of these workers and their roles in urban economics is needed (Grant, 2010; 2013).

A review of the literature on the informal economy and waste-pickers in particular from a South African perspective reveals that researchers are starting to adhere to this call and pay attention to the lower tier of the informal economy, waste-pickers in particular. Waste-pickers working and living on South Africa's landfill sites have received the bulk of attention in the literature, with street waste-pickers receiving less coverage (Chvatal, 2010; Samson, 2010a; Schenck and Blaauw, 2011b). More detailed, micro-level studies include those of McLean (2000) in Durban, Langenhoven and Dyssel (2007) in Mitchells Plain (Cape Town), as well as Benson and Vanqa-Mgijima (2010) and van Heerden (2015) in Cape Town. Schenck and Blaauw (2011a; 2011b) conducted exploratory and descriptive studies on street waste-pickers in Pretoria. Viljoen's (2014) study covered selected cities in South Africa. The study by Viljoen *et al.* (2012) is the only study to date that, to our knowledge, specifically highlights the important and often misunderstood role of buy-back centres in the lives of waste-pickers and the recycling value chain.

The above-mentioned studies explore the socio-economic circumstances of the waste-pickers at a micro-level and arrive at mostly qualitative conclusions regarding poverty among the street waste-pickers. We argue that a quantitative approach is needed to address the research question of this article: What is the impact of the waste-pickers' informal activities on their poverty status? Such

an approach allows a more quantifiable picture of the poverty status of this vulnerable and often marginalised group in the informal economy. This has informed the research approach followed by Schenck and Blaauw (2011b).

5. Method

Schenck and Blaauw (2011a) conducted an exploratory qualitative survey among waste-pickers in Pretoria in 2009, during which they recognised several areas requiring further investigation. These identified areas form the basis of their comprehensive, quantitative micro-survey among waste-pickers in Pretoria in 2010. Schenck and Blaauw (2011b) developed a survey instrument around the themes and patterns identified in their 2009 exploratory enquiry.

The survey instrument was tested on randomly selected waste-pickers and revised. A significant benefit of the study was that all the fieldwork was done by one experienced fieldworker. She was fluent in a number of the official South African languages and was able to translate the survey instrument to improve the respondents' understanding of the questions. This was necessary as low literacy levels would otherwise have prevented many waste-pickers (without assistance) from completing the survey instrument. Ethical clearance was obtained for the survey from the tertiary institution where the first author of the Schenck and Blaauw (2011b) article was affiliated at the time and all ethical principles such as anonymity and ensuring the dignity of the respondents were strictly adhered to at all times. Waste-pickers provided their consent to the fieldworker before being interviewed, and it was also made clear to the respondents that they can terminate the interview at any time.

Initial observations by Schenck and Blaauw (2011b) suggested that there were 150 to 200 street waste-pickers within the Pretoria city limits at the time of the study in 2010. Waste-pickers were approached at the buy-back centres where they sold their collected goods (Schenck and Blaauw, 2011b). The ten buy-back centres identified in Pretoria at the time belonged to only two companies. The fieldworker reported that she frequently encountered the same waste-pickers at different buy-back centres, probably in search of better prices (Schenck and Blaauw, 2011b). Hayami and co-workers (2006) found similar movements between buy-back centres in their study of street waste-pickers in India.

The resultant fluid nature of the research population (Viljoen, 2014) necessitated the use of availability sampling to complete the survey. Consequently, the fieldworker interviewed all the street waste-pickers who were willing to participate in the survey. From July to September 2010, she identified

and interviewed waste-pickers until no new interviewees could be found ($n = 142$). It is possible that not all the waste-pickers in Pretoria were included in the study. We are satisfied that the research population was comprehensively surveyed. Only a few (five) individuals declined to be interviewed. This represents a response rate of 96.6%.

The first part of the survey's dataset was used to compile a descriptive analysis of the lives and work of street waste-pickers in Pretoria. These results were published by Schenck and Blaauw (2011b). The empirical analysis of the current study specifically utilises survey data on income levels. Monthly income levels are calculated and compared to four poverty thresholds to determine poverty levels among the waste-pickers. The final part of the analysis regresses two income variables on explanatory variables related to waste-picker characteristics and the type of recyclables collected in order to identify possible determinants of waste-picker income.

The following section provides background information on Pretoria as well as a summary of the characteristics of the respondents, as published by Schenck and Blaauw (2011b). This forms the background and context for the empirical analysis and results, which is the focus of this article.

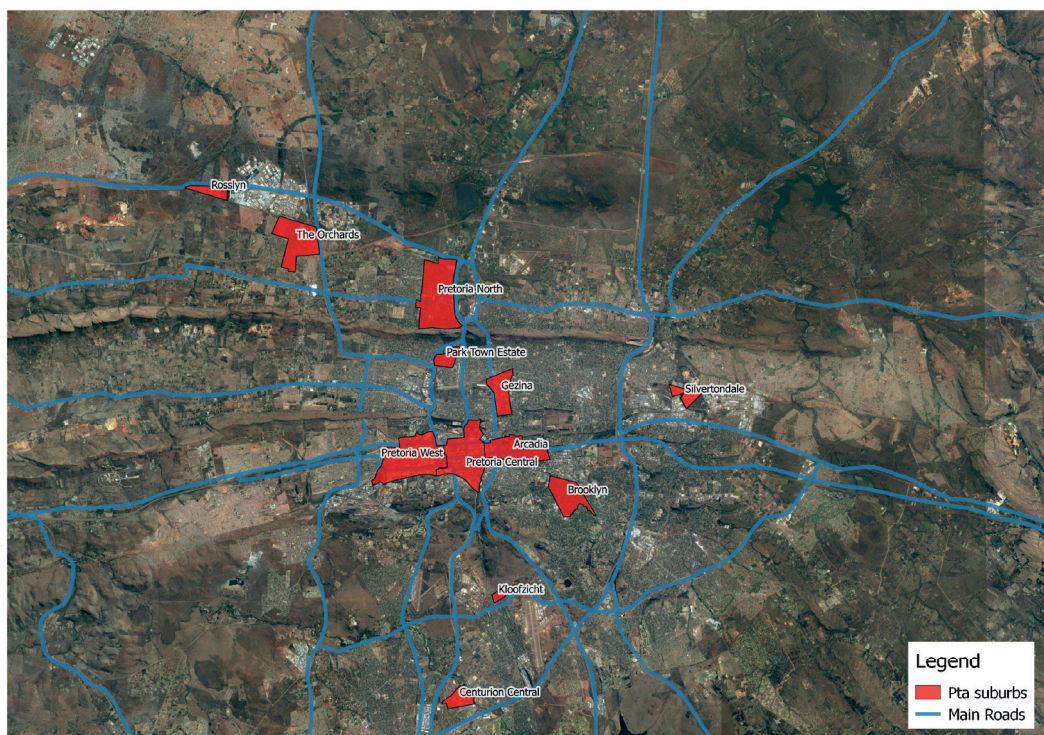
6. Research area: Pretoria

According to official statistics from the 2011 census of Statistics South Africa, the population in the Pretoria city limits totalled 741 651 people. This translates into a population density of 1 079 people per square kilometre (Statistics South Africa, 2018). Pretoria is not as wealthy as Johannesburg. In 2014, only 5% of the highest net worth individuals (i.e. people with a net worth of more than 1 million US\$) in South Africa lived in Pretoria, compared with 50% in Johannesburg, 19% in Cape Town and 6% in Durban (BusinessTech, 2015). In terms of the broader income distribution, 18.9% of the population had an average annual household income of between ZAR 153 801 (US\$ 21 204.86; Euro 15 255.61) and 307 600 (US\$ 42 409.45; Euro 30 511.03) in 2011. Approximately 12.7% of the residents recorded zero income at the time (Statistics South Africa, 2018).

Pretoria was chosen as the area for the case study for two reasons. Firstly, the legislative environment does not hinder the activities of street waste-pickers. There is a municipal by-law that states: *"Any person interested in collecting and processing recyclable waste shall register with the Municipality as a permit holder for the purpose of, among other, data collection into the waste management information"* (City of Tshwane Metropolitan Municipality 2017).

This is, however, not uniformly enforced. Secondly, the research area includes a mix of wealthier (high income) and poorer (low income) suburbs. Pretoria North and Brooklyn are considered wealthier suburbs, compared to, e.g. Gezina and Pretoria Central. Waste-pickers were interviewed in the suburbs depicted in Figure 3.

FIGURE 3: MAP INDICATING THE SUBURBS WHERE INTERVIEWS WITH THE PRETORIA STREET WASTE-PICKERS WERE CONDUCTED (2010)



7. Background to this analysis: Demographic profile of the street waste-pickers in Pretoria (2010) as published by Schenck and Blaauw (2011b)

The most effective way of locating possible respondents was to interview them at the buy-back centres, where they sell the recyclables. The waste-pickers themselves directed the fieldworker to the various buy-back centres. Following this protocol, the fieldworker identified and interviewed waste-pickers until no new interviewees could be found and information was saturated. This took place during a five-week period from July to September 2010. In total, 142 respondents were interviewed. Out of this total, 138 were male (97.2%). The four women (2.8% of the sample) were either in a relationship with men or were

office workers who took waste-paper to the buy-back centres to earn additional income (Schenck and Blaauw, 2011b). More women are typically found on the landfill sites (Schenck *et al.*, 2016). The reasons for this could be that women find the street trolleys too heavy to move and they are more vulnerable to the elements and crime on the streets than on the landfill sites (Chvatal, 2010; Samson, 2010a; Schenck and Blaauw, 2011b).

During the qualitative study by Schenck and Blaauw (2011a), the fieldworkers investigated whether the waste-pickers had children or dependants. From the feedback obtained in that exploratory study, it was not always clear whether the concepts of 'children' and 'dependants' were correctly interpreted by the respondents (Schenck and Blaauw, 2011b). The fieldworker in this study took the time to explain these concepts clearly, and was therefore able to obtain a more reliable estimate of the number of people, depending on the waste-pickers interviewed.

Although all respondents were born in South Africa, the majority originated from rural areas in other provinces (Table 1)². While 117 of the waste-pickers indicated that they had previously been in full-time employment, these jobs had mainly been temporary, short-term, menial positions such as brick layers, painters and activities related to construction (Schenck and Blaauw, 2011b). Their generally low levels of education (Table 1 and Figure 4) would make it very difficult for them to find employment in the formal economy. Figure 4 shows the number of respondents who completed each grade in the South African schooling system. Grade 7 indicates that a learner completed primary schooling and grade 12 indicates matric or completed secondary schooling.

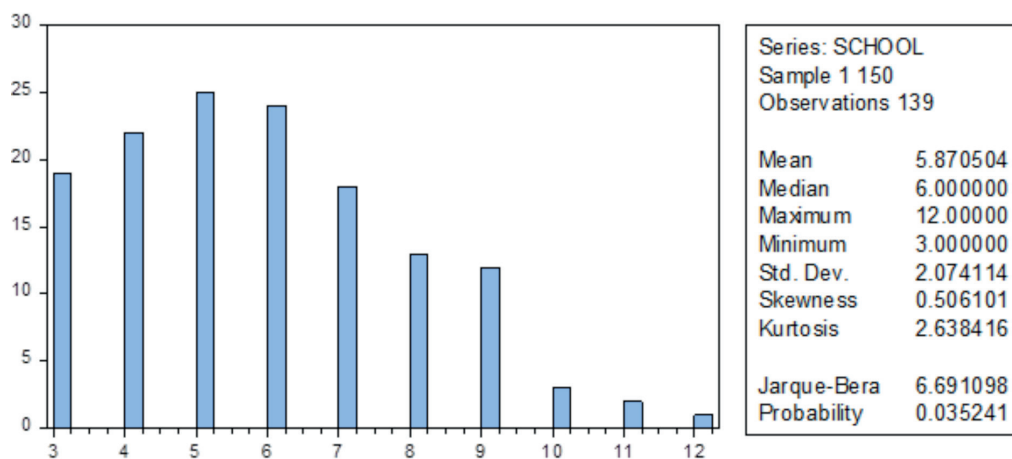
² No foreign migrants were found or interviewed in the Pretoria study at the time. This picture may have changed since the study was conducted.

TABLE 1: DEMOGRAPHIC PROFILE OF STREET WASTE-PICKERS IN PRETORIA, SOUTH AFRICA (2010)

		%
Country of origin	South Africa	100
Province of origin	Gauteng	3
	Limpopo	63
	Mpumalanga	20
	KwaZulu-Natal	9
Gender	Male	97.2
	Female	2.8
Ethnicity	African	100
Age	20 to 30	6
	31 to 40	22
	41 to 50	49
	51 to 60	23
Education	Some primary schooling	63
	Completed primary schooling	13
	Some secondary schooling	23
	Completed secondary schooling	1
Marital status	Never married/single	33
	Married	47
	Separated/divorced	18
	Widowed	2
Dependants	Average number of dependants = 4	
	Percentage with no dependants	14
	Percentage with 9 dependants	1
Place of residence	Living with their family	4
	Backyard rooms	4
	In the veld or under bushes	15
	On the street	69
	Backyard shacks	4
	Men's hostels in the townships	4

Source: Survey data

FIGURE 4: HISTOGRAM INDICATING THE NUMBER (N) OF THE PRETORIA STREET WASTE-PICKERS (ON THE VERTICAL AXIS) AND THE HIGHEST COMPLETED GRADE IN THE SOUTH AFRICAN SCHOOLING SYSTEM (ON THE HORIZONTAL AXIS) (2010)

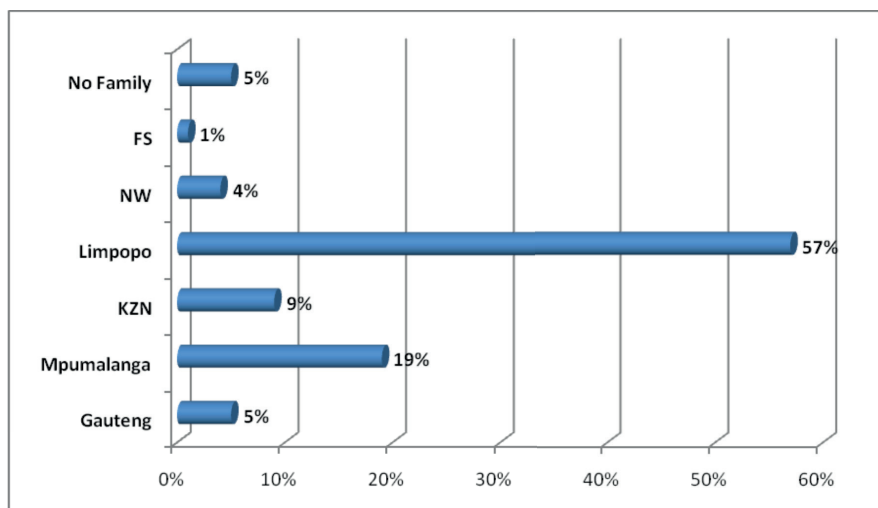


Source: Survey data

Fewer than half of the respondents were married. The employment status of the spouses of those who were married is an important area for future inquiry as it will provide an important socio-economic context for an analysis of the waste-pickers' families as economic decision-making units. The field-worker observed a distinctive disconnectedness between the waste-pickers and their families. This was confirmed when the respondents were asked to indicate how often they visited their families (Schenck and Blaauw, 2011b). Eighty-four percent saw their families only twice a year or less. Only 3% saw their families daily, 1% weekly, 6% monthly and another 6% quarterly (Schenck and Blaauw, 2011b). Like others engaging in informal activities such as day labourers, waste-pickers also maintained that they visited their families when they had the financial resources to do so. These results are important when considered against the backdrop of street waste-pickers' migratory status from rural areas, which is where their families live (Figure 5).

Given the distances waste-pickers need to travel to visit their families, it is understandable that if they do not earn enough, they would be unable to visit their families regularly. As a result, family ties could be weakened or severed altogether (Schenck and Blaauw, 2011b). This has important implications for their level of multi-dimensional poverty. Family ties and relationships are an important component of being poor on a subjective level. The subjective components of being poor are no less severe than the objective or monetary dimension of poverty.

FIGURE 5: PROVINCES WHERE THE FAMILIES OF THE PRETORIA STREET WASTE-PICKERS RESIDE (2010)



Source: Survey data

8. Waste-pickers' daily lives and collection activities

Ninety (63%) of those interviewed had become waste-pickers within the preceding five years. One had been engaged in the activity for 12 years (longest), having started in 1998 (Schenck and Blaauw, 2011b).

The waste-pickers reported that the first priority upon entering the 'business' of collecting waste on the street was to obtain a trolley, as a matter of urgency (Schenck and Blaauw, 2011b). Ideally, the waste-picker would find a friend willing to share a trolley. Alternatively, he/she might use boxes to carry items until he/she was in a position to buy, make or steal a trolley (McLean, 2000). Some respondents admitted to having stolen a trolley from a supermarket parking area (Schenck and Blaauw, 2011b). McLean (2000) also found that in Durban, waste-pickers collecting goods with a trolley earned more because they were able to move faster and consequently collect more effectively. Figure 6 illustrates some of the modifications made to their trolleys by the street waste-pickers.

FIGURE 6: SOME STREET-PICKERS WITH THEIR MODIFIED TROLLEYS



Source: Fieldwork; Schenck and Blaauw (2011b)

Buy-back centres buy paper, cardboard boxes, plastic bottles and, in some instances, scrap metal (Viljoen *et al.*, 2012). During the survey, it emerged that the recyclable waste was purchased by two companies for fixed prices, but these prices differed significantly between the two companies (Schenck and Blaauw, 2011b). One company, for example, offered lower prices for boxes and white paper than the other company. After delivering what they had collected, most respondents would rest, eat, drink and socialise. Some began working again later in the day to start accumulating waste for the following day's delivery (Schenck and Blaauw, 2011b). This routine formed the basis of the everyday existence of the people interviewed, with no alternative scenario evidently open to them. How this contributed to or helped to alleviate their state of poverty goes to the core of the empirical investigation in this article, conducted from the unused data obtained by Schenck and Blaauw in 2010.

9. Results and discussion: Waste-pickers' income and poverty analysis

Street waste-pickers did not receive a regular income or monthly salary, nor did they receive a disability or old age grant at the time. Given the physical demands of waste-picking, one did not expect them to qualify for such grants. About one-third did, however, receive a child support grant. In the midst of their highly variable and uncertain income, a small consolation for waste-pickers is the fact that this uncertainty extends to all forms of informal employment, including car guarding and day labouring.

Given waste-picking's highly variable returns, three measures of income were constructed using the self-reported earnings of the street waste-pickers surveyed:

- Income from waste-picking last week (the week before the interview)
- Income from waste-picking in a 'good' week
- Income from waste-picking in a 'bad' week.

The average weekly income earned by street waste-pickers during the week before the interview was ZAR 156.35 (US\$ 21.32; Euro 16.53)³. The three measures of weekly income (Table 2) were converted into monthly values. For individuals who indicated that they received a child grant, the number of eligible children was multiplied by the value of the monthly grant (ZAR 250 [US\$ 34.01; Euro 26.44] at the time of the interview) and this amount was added to the waste-pickers' earnings to calculate a total monthly income. This provided a more nuanced view of the ability of the street waste-pickers to support themselves and/or their families.

TABLE 2: AVERAGE MONTHLY INCOME (2010) OF STREET WASTE-PICKERS IN PRETORIA
(VARIOUS SOURCES)

	ZAR	US\$	Euro
Last week	614.94	83.87	65.03
Good week	1142.16	155.77	120.78
Bad week	448.63	61.18	47.44
Last week + child grant	746.23	101.77	78.91
Good week + child grant	1273.45	173.67	134.66
Bad week + child grant	579.93	79.09	61.33

Source: Survey data

³ The US\$ and Euro values were calculated using the average of the daily exchange rates for the period of the fieldwork obtained from the South African Reserve Bank (SARB, 2016a; 2016b).

In South Africa, there is currently no official poverty line. Two measures or benchmarks of poverty are, however, regularly used. Statistics South Africa (StatsSA) and the South African Labour and Development Research Unit (SALDRU) (Statistics South Africa, 2015a; Budlender, Leibbrandt and Woolard, 2015) calculate poverty thresholds and both of these measures indicate a lower bound and an upper bound margin (Table 3). In order to do the poverty analysis, the original lower and upper bound amounts for 2015 were converted into 2010 prices using the corresponding values from the official Consumer Price Index. The upper and lower bounds of both these two measures were used to analyse the adequacy of waste-picker earnings.

TABLE 3: POVERTY RATES OF STREET WASTE-PICKERS IN PRETORIA (2010)

Poverty threshold (weekly income)				
	Lower bound StatsSA	Lower bound SALDRU	Upper bound StatsSA	Upper bound SALDRU
	ZAR 484.66	ZAR 516.58	ZAR 753.59	ZAR 1008.01
	(US\$ 66.10; Euro 51.25)	(US\$ 70.45; Euro 54.63)	(US\$ 102.77; Euro 79.69)	(US\$ 137.47; Euro 106.59)
Percentage below poverty in 2010 (supporting only him/herself from waste-picking income)				
All (last week)	52	53	70	92
All (good week)	1	1	1	36
All (bad week)	91	91	92	98
Percentage below poverty in 2010 (street waste-picker + dependants, waste-picking income + grant)				
All (last week)	88	88	94	96
All (good week)	81	81	90	91
All (bad week)	97	97	100	100

Source: Survey data

The average monthly income based on the income earned during the week preceding the interviews amounted to ZAR 614.94 (US\$ 83.87; Euro 65.03). This average was more than both the amounts provided as lower bounds, but did not reach the upper bounds. If these waste-pickers were only taking care of themselves, the average income earned in the week preceding the interview would be enough to not be classified as ‘poor’ (based on the lower bounds). Individually, 52%, 53%, 70% or 92% of them would be classified as ‘poor’ based on the four different poverty thresholds.

The average monthly income during a ‘good’ week of waste-picking (ZAR 1142.16) was higher than both of the upper bounds. Therefore, three of the

thresholds indicate a poverty rate of only 1%. Based on the high upper bound of SALDRU (see Table 3), only 36% of the respondents would be considered ‘poor’ – if they only had to support themselves with their income from waste-picking. During a ‘bad’ week of waste-picking, a different picture emerges. The average income of ZAR 448.63 (US\$ 61.18; Euro 47.44) is lower than all of the poverty measures. It therefore comes as no surprise that during a ‘bad’ week, between 91% and 98% of the waste-pickers in the sample would be classified as ‘poor’.

The above analysis suggests that waste-picking does present an opportunity for individuals to support themselves and to lift themselves out of poverty. The picture changes, however, when the number of dependants is considered. The average number of dependants was 3.8; i.e., the average waste-picker has to earn enough to support 4.8 individuals. Only 20 of the waste-pickers in the sample had no dependants. The bottom part of Table 3 indicates the levels of poverty, taking into account the number of dependants per individual waste-picker as well as the additional income received in the form of child grants.

Based on the lower bounds, 88% of the waste-pickers would be classified as ‘poor’ when one considers the income earned during the week preceding the interviews. Only four of the waste-pickers with dependants earned enough not to be considered ‘poor’. During a ‘good’ week, 81% would be considered ‘poor’ based on the lower bounds. Again, the reality of caring for dependants has a severe impact on their poverty status – only 12 (8%) individuals who were taking care of dependants were not below the poverty line. As was evident from the low average income during a ‘bad’ week, the poverty levels during a bad week were almost 100%. Therefore, not one of the waste-pickers, taking care of dependants, was above the poverty line during a ‘bad’ week of waste-picking.

McLean (2000) noted the same vulnerability of waste-pickers in her Durban study. Waste-pickers mostly lived under conditions of extreme poverty, having no visible assets except perhaps a trolley. They could not afford accommodation and could barely afford food, let alone support a family (McLean, 2000). The Pretoria waste-pickers faced similar conditions. These results are also supported by other South African studies (Medina, 2007; Viljoen, 2014). Schenck, Blaauw and Viljoen (2012; 2016) specifically studied the differences in the income earned by waste-pickers on landfill sites and street waste-pickers in the three main municipalities of the Free State province in South Africa. They found that the income earned by waste-pickers on the landfill is relatively higher than what is earned by street waste-pickers in the same municipalities. Street waste-pickers are viewed as the lowest paid in the recycling value chain and vulnerable in

terms of poverty and low and uncertain incomes (Schenck, Blaauw and Viljoen, 2012; 2016). However, the street waste-pickers in South Africa form the very foundation of this value chain.

Similar vulnerabilities and poverty levels are found among waste-pickers in other parts of Africa and rest of the developing world. Oteng-Ababio (2012) reports that in the greater Accra metropolitan area (GAMA), waste-pickers are actively involved in general door-to-door waste collection for a fee. In addition, they sort the waste and sell recyclables in order to supplement their income. At the time of his study, the average picker makes an average of GH¢50.00 (US\$35.10) a day, compared to Ghana's minimum wage of GH¢3.11 (US\$ 2.12) at the time (Oteng-Ababio, 2012:418). Although this is more than 1 500 per cent above the minimum wage, one must remember that several expenses such as the hiring of a cart or trolley still need to be paid for (Oteng-Ababio, 2012:418).

Also in Ghana, but this time in Sekondi-Takoradi, Obeng-Odoom (2014) focuses on the collection and reselling of plastic water bottles by informal collectors. Some of the pickers buy the plastic bottles from cleaners at hotels and guesthouses (Obeng-Odoom, 2014:131). The income of the pickers depends on the nature of the plastic. Weight is, however, the key factor with 9 kilograms of plastic waste earning around US\$ 0.96 at the time (Obeng-Odoom, 2014:131). Obeng-Odoom (2018) investigated the collection of waste in Abidjan in Côte d'Ivoire. Here, the pickers are also paid by weight or the quantity of bottles sold. Three big bottles or four small bottles of waste were worth US\$ 0.16 at the time of the research. Unlike in Ghana, waste-picking income is regarded as very low – even in terms of Ivorian informal economy standards (Obeng-Odoom, 2018:652).

Hayami and co-workers (2006) found that the majority of waste-pickers in Delhi, India, also experienced chronic poverty while working under harsh conditions. The situation for the more than 100 000 waste-pickers in Dhaka (Bangladesh) is no different. Waste-pickers generally live below the poverty line despite working in hazardous conditions (Ullah, 2008). The average income per day was Tk.80 (Ullah, 2008). This represents 50% of the World Bank's international poverty line of 1.90 US\$ per day. In her study on the activities of the "catadores" in Rio de Janeiro, Brazil, in 2005 and 2007, Millar (2008) found that they earned R\$600 per month. At the time, this was twice the minimum wage in Brazil.

10. Towards explaining the waste-pickers' income

In an attempt to identify determinants of waste-picking income, two of the income variables constructed in the poverty analysis – income earned in a ‘good’ week (GOODWEEK) and income earned during the week preceding the interviews (LASTWEEK) – were regressed on a few explanatory variables (Table 4).

TABLE 4: RESULTS OF OLS REGRESSION ANALYSIS

INDEPENDENT		DEPENDENT VARIABLE		
VARIABLES	GOOD WEEK	LAST WEEK		
	Coefficient	Probability	Coefficient	Probability
CONSTANT	***204.22	0.0020	***123.89	0.0009
AGE	6.25	0.2213	-0.58	0.8775
SCHOOL	***13.50	0.0000	***9.21	0.0000
HOURS	-17.93	0.4029	-6.50	0.4733
YEARS	*-5.95	0.0773	***-8.98	0.0003
PAPERPLASTIC	**55.81	0.0388	***49.20	0.0040
GLASSMIX	***155.58	0.0000	***137.12	0.0000
METALMIX	*119.67	0.0822	***150.42	0.0000
Observations	139		139	
Adjusted R2	0.1144		0.2531	

Regressions were estimated with white heteroskedasticity-consistent standard errors and covariance:

* Statistically significant at 10%

** Statistically significant at 5%

*** Statistically significant at 1%

Apart from the variables included in Table 4, a few more explanatory variables were considered. The majority of waste-pickers made use of a trolley to transport their products. There was therefore not enough variation in the sample to test for the effect of trolleys. We did, however, test for whether the origin of the trolley and any modifications made a difference to the waste-pickers' income. Our rationale was that the tailor-made trolleys might work better. This variable had a positive co-efficient in the ‘good’ week analysis, but it was not statistically significant. In the last week analysis, the estimated sign was negative, but also insignificant.

With only four females surveyed, gender was ignored. The same applied for marital status. Whether the respondents held prior full-time employment was not significant. There was also insufficient variation to justify the inclusion of the usual schooling categories (some primary school, primary complete, some secondary school, secondary complete, tertiary education). In the end, the highest grade passed at school was included in the analysis.

Focusing on the individual characteristics of the respondents, the estimation regarding age was inconsistent in terms of sign and also not statistically significant. The years of schooling variable was significant at 1% in both models. One additional year of schooling added between ZAR 9.20 (US\$ 1.25; Euro 0.97) and ZAR 13.50 (US\$ 1.84; Euro 1.43) to weekly earnings. We argue that increased levels of schooling, i.e. the ability to read and write, give waste-pickers the ability to better evaluate the different prices from buyback-centres and to determine the best possible product mix in order to maximise their income. The starting time for the waste-picking activity, represented by HOURS, was not significant. It might have been expected that the early starters would earn more. However, while the expected negative sign was obtained, it was not statistically significant. The variable YEARS was an indication of the number of years that the individual had been active in waste-picking. The negative coefficient in both models indicated that the newcomers earned more than the more experienced waste-pickers. The reasons for this might be a combination of younger waste-pickers having more energy and being able to increase their productivity accordingly. Even though the estimated coefficient of YEARS was significant only at 10% in the GOODWEEK regression, it was significant at 1% in the LASTWEEK model (see Table 4) and therefore discussed. This hypothesis must obviously be tested in future qualitative research, focusing on this aspect.

A comparison of the kind of products being recycled yielded the expected results. The base category in the analysis was the group that focused only on paper (including paper, boxes, etc.). Adding plastic to paper products added between ZAR 49.20 and ZAR 55.81 per week. The more lucrative products turned out to be a mix of paper, plastic and either glass (GLASSMIX) or metals (METALMIX). From the regression results, it is evident that waste-pickers can increase their earnings by collecting a range of recyclables – the more the variety, the higher their income. For example, a combination of paper and plastic renders higher income than paper alone. When waste-pickers also collect glass and metals (iron and copper) in addition to paper and plastic, it increases income even more.

11. Conclusions

Theoretically, waste-picking has the potential to lift people out of poverty and allow them to take care of themselves – to be self-reliant. In reality, as the results showed, poverty is multidimensional and intergenerational (Megbowon, 2018) with factors such as unemployment, low schooling, and complex family systems. The lived experiences of the waste-pickers do not conform to the Dualist theory of urban economics, i.e. of a temporary informal activity, allowing for transitioning into the formal economy when economic growth improves. Forced into the informal economy by a combination of local and global forces, Pretoria's street waste-pickers demonstrated that, given their low education and skills levels, they had little chance of joining re-joining the formal sector. The permanent nature of this activity lends support to other urban economics views such as the Structuralists, who see the informal economy as a permanent feature of the modern capitalist economy. The form of living (See Millar, 2018) of Pretoria's waste-pickers in the urban informal economy tells the story of the very foundation of the value chain of the waste economy, yet they are the most vulnerable and least able to plan and mitigate against possible exploitation or other exogenous shocks.

This study also shows that despite the fact that the waste-pickers earn an income, the majority of street waste-pickers have an average of four dependants and under such circumstances the income derived from waste-picking is not enough to rise above poverty. Apart from the obvious hardship, poverty has a negative impact on social and family cohesion since most of the waste-pickers' families live in remote rural areas and can rarely afford to visit their families.

The waste-pickers did not earn enough to support a family, but nevertheless engaged in this work in order to survive and sustain themselves and others. What alternatives await the waste-pickers? Waste-pickers are able to do something constructive instead of resorting to crime, for example. Given their limited experience and meagre contribution to human capital in a conventional sense, there is actually no viable legal alternative for them to pursue in order to be economically active.

The reasons why workers may choose to pursue this activity can be a complex combination of various economic and/or political economic considerations. Even though waste-picking does not provide an income that is stable or allows the waste-picker to escape poverty, it does instil a sense of self-reliance and can form part of the 'agency' component of Sen's capability approach (Drèze and Sen, 1989; Sen, 1999). Sen's explanation of agency suggests that the achievement

of the economic agent can be evaluated in terms of his or her own values and goals. These include, for example, being able to determine one's own schedule in terms of working hours, 'be my own boss', i.e. the desire to work independently without a boss (Schenck and Blaauw, 2011a; 2011b). It also may afford the worker the opportunity to combine non-work activities with work. Barchiesi (2012:244) provides a political economy perspective when he points out that: *'...colonized workers have historically resisted working for wages. Faced with the violence, racism, and inadequate rewards of the capitalist workplace, even the minority with access to wage-earning occupations often preferred casual employment, which, despite its insecurity, cushioned the impact of capitalist production discipline...'*

Therefore, even if waste-picking at first glance seems to be an irrational choice, given the low returns and hardship that accompany it, one must not underestimate the value it brings to a waste-picker's self-esteem and sense of empowerment (Sen, 1999). This self-reliance must be nurtured and ways found to reduce some of the barriers, which would then allow waste-pickers to deliver (and extract) more value higher up the value chain.

Within this context, it is important to consider existing and proposed policies for addressing the tensions and contradictions in urban economic development of which informality is a major part. A number of authors (e.g. Dias, 2009; Samson, 2010a, 2010b; Theron, 2010; Schenck and Blaauw, 2011a, 2011b; Viljoen, 2014; Viljoen *et al.*, 2016) propose a range of policy options to realise the empowerment of informal labour. Organising waste-pickers to afford them a voice and greater representation, recognising them as part of a city's waste management system and also acknowledging their contribution to the environment would produce benefits at many different levels. To find sustainable solutions to the problem of insufficient income, conversations should be initiated with the buy-back centres, municipalities and, even more importantly, the waste-pickers themselves – or organisations representing them (such as SAWPA and the African Reclaimers Organisation (ARO)). All these role players are currently functioning in silos, effectively cut off from one another. Greater synergy between the main role players could lay the foundation for waste-pickers to move up the value chain and engage in activities that are more mentally and financially rewarding. In all of this, it remains pivotal to bear in mind that, given the limited resources under the control of the waste-pickers themselves, the intervention of outside entities with resources at their disposal is critical to improve the livelihoods of waste-pickers.

Any attempt to increase earnings is linked to the endogenous and exogenous aspects of the socio-economic and political context within which street waste-pickers operate. Exogenously, waste-pickers function within the context of the degree to which local municipalities are able and willing to integrate them as part of the official waste management strategies. This, in turn, influences the management practices of local municipalities and evidently the degree of tolerance of the presence of the waste-pickers and appreciation for the work they are doing. These aspects need to be investigated by for example selective key informant interviews and other qualitative studies. Endogenously, waste-pickers' motivation and drive determine the hours they put into this activity. Some only want to earn enough for their next fix, while others are literally walking the extra mile to take care of numerous dependants.

Unless the complexity of poverty is acknowledged and acted upon by policy-makers in a sincere attempt to uphold the South African Constitution, attempts by vulnerable people to improve their status will be unsuccessful and they will remain trapped in an ongoing and undignified spiral of poverty and economic marginalisation.

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