# CONTRACTING OUT OF SERVICE ACTIVITIES AND THE EFFECTS ON SECTORAL EMPLOYMENT PATTERNS IN SOUTH AFRICA

**FIONA TREGENNA**

**Faculty of Economics, University of Cambridge**

## ABSTRACT

This paper develops a methodology and uses household and labour survey data to analyse the extent of intersectoral outsourcing of the employment of specific labour-intensive activities in South Africa from 1997-2007. It is shown that the relatively high growth in services employment is driven by an expansion of employment of cleaners and security guards and an outsourcing-type reallocation of these activities from manufacturing and the public sector towards private services. These activities have limited scope for cumulative productivity increases. The analysis has implications for understanding changes in the sectoral structure of middle income economies.

Keywords: outsourcing, employment, manufacturing, services, public sector, South Africa

JEL codes: J21, L24, L33, L60, L80, M55

## 1 INTRODUCTION

Anecdotal evidence suggests that there has been widespread domestic outsourcing of activities such as cleaning and security services in South Africa, especially since the late 1990's. There has been speculation as to the extent to which this outsourcing explains the disparate trends in employment across sectors. Manufacturing employment in South Africa has been stagnant for a number of years, declining slightly as a share of total employment and growing very slowly in absolute numbers. Employment in (private) services, on the other hand, has grown both absolutely and as a share of GDP.

By outsourcing we refer to the contracting out to external agents of activities previously performed in-house[1]. Since the firms to which these activities are outsourced are classified under services, outsourcing can swell the apparent growth in services employment and dampen employment growth in other sectors. For example, cleaners employed by a factory that were previously reported as manufacturing jobs but which have since been outsourced to a cleaning company would now be reported as service sector jobs. There has also been significant outsourcing of functions from the public sector to private services.

There is a lack of clarity as to the extent to which these processes explain the apparent intersectoral shifts in employment, as there is little empirical evidence or estimations in this regard. Quantifying how much intersectoral outsourcing has actually taken place is important for understanding how dynamic the growth of employment in services has really been, and where prospects for future employment creation might lie. This is especially pertinent for South Africa, given that the country faces an extremely high rate of unemployment: 25.5% (narrowly defined) and 38.3% (broadly defined).[2]

Getting a sense of the extent of intersectoral outsourcing in South Africa is thus germane to understanding the extent to which there has been a real structural shift in the economy, as opposed to just a shifting around of activities. Outsourcing is also relevant to the degree and nature of the division of labour in the economy, to the structure and organisation of production of the activities being outsourced, and to labour unionisation and organisation.

Cleaning and security guards are two occupations typically associated with outsourcing in South Africa. Whereas these functions were traditionally generally undertaken in-house, they have increasingly been outsourced to specialised service providers, which are classified in the services sector. Excluding these two occupations, employment has actually grown at a faster rate in manufacturing than in services over recent years. This is surprising, and occasions a more detailed analysis of trends in these two occupational categories. In particular, we

[1] Note that this analysis deals with the outsourcing of activities between firms in the domestic economy, and not what is sometimes termed the 'outsourcing' of jobs internationally in terms of the 'offshoring' of economic activities to countries with lower costs of production.

[2] Statistics South Africa (2008). The narrow rate of unemployment excludes discouraged job-seekers, who have not taken active steps to seek employment in the 4 weeks preceding the interview, and is calculated from the published data.

investigate how much of the shift in employment from manufacturing to services can be explained in terms of the outsourcing of cleaners and security guards. We also consider the same issue in terms of outsourcing as a factor in the employment trends between the public sector and private services. We then project what sectoral employment trends might have been in the absence of intersectoral outsourcing. The focus of the empirical analysis is thus on the effects of intersectoral outsourcing of specific occupations on the overall sectoral composition of employment; we do not attempt to quantify the effects of outsourcing on the overall level of employment.

By way of background, we begin in the following section with an overview of sectoral shifts which have taken place in the South African economy and consider the possible relevance of such shifts for growth. We discuss outsourcing as a type of shift in corporate and industrial structure, and the specific dynamics of outsourcing in the South African case. This contextualises the empirical analysis of intersectoral shifts in the employment of these two occupations, which is presented in section 3. We examine the sub-sectoral trends in employment, especially in terms of the increasing concentration of services employment in the 'other business services' sub-sector of services (in which providers of services such as cleaning and security to firms that have outsourced these functions are classified). We then decompose the changes in employment in the occupations by sector into various components, in order to shed light on the principal factors accounting for the sectoral shifts in employment. In the final part of the empirical analysis we project how different overall employment in manufacturing, private services, and the public sector might have been in the absence of outsourcing-type shifts. Section 4 discusses the broader implications of the empirical findings, and concludes.

## 2 OUTSOURCING AND CHANGES IN CORPORATE AND INDUSTRIAL STRUCTURE

### *2.1 Shifting sectoral and employment patterns*

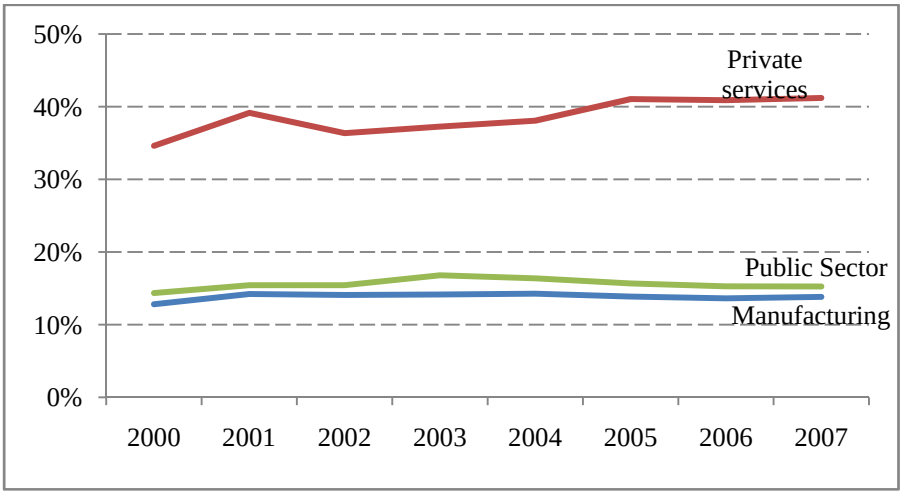
As countries develop, the rate of growth of the manufacturing sector typically tends to level off and the manufacturing sector accounts for diminishing shares of aggregate output and employment, while the service sector accounts for increasing shares. Many high-income and some middle-income countries have experienced deindustrialisation, which is commonly

taken as referring to a decline in the share of manufacturing in total employment[3]. In contrast, services has grown as a share of employment (as well as of GDP) in many countries.

Explanations for the relative decline in manufacturing and rise in services include differential rates of productivity growth; increasing demand from manufacturing for services inputs; outsourcing of functions from manufacturing to services; adverse pressure on manufacturing (which is generally more tradable than is services) from lower-cost producers in developing countries; Dutch Disease; differential income elasticities; a fall in the relative prices of manufactures (for exogenous reasons) such that they account for a smaller share of consumer expenditure and declining rates of investment (since a disproportionately large share of investment expenditure is accounted for by manufactures).

Figure 1 below shows the shares of total employment in South Africa accounted for by manufacturing, private services, and the public sector respectively. The only significant change in this respect is the increasing share of private services, which now accounts for 41% of total employment (up from 34% in 2001).

*Figure 1: Sectoral shares of total employment, 2000-2007*




Derived from Labour Force Surveys. The value for each year is calculated as the mean of the March and September figures for that year.

Private services employment in South Africa grew by an average annualised rate of 1.64% per annum between 2001 and 2007, above the economy-wide employment growth of 1.14% over the same period. 13.4% of the total increase in private services employment was in

[3] See Palma (2008) for a review of deindustrialisation internationally.

employment of cleaners (an increase of about 66 000 jobs), 30.8% was in employment of security guards (an increase of about 152 000 jobs), and the remaining 55.8% was in employment of other occupations.

Cleaning employment grew at 1.22% per annum between 2001 and 2007, similar to the overall growth rate of employment over this period. Excluding cleaners in private households, employment grew at a rather higher rate of 2.55% per annum. However, it should be noted that the number of hours that cleaners reported as usually working fell from 43.95 in 2001 to 41.19 in 2007[4], and so the total number of hours worked by cleaners grew by just 0.13% per annum or 1.80% per annum when cleaners in private households are excluded.

Security employment, on the other hand, grew at a very high rate of 7.38% per annum. This is associated with an increase in demand for security services and the overall growth in the private security sector. The increase in demand might be related to trends in crime and perceptions of crime trends, and lack of confidence in the national police services (particularly amongst those in a position to engage private security services). The growth in security guard employment is slightly dampened when account is taken of the fall in average hours worked (from 58.20 hours in 2001 to 56.88 hours in 2007). The total number of security guard hours worked thus grew by an annualised rate of 6.97% per annum between 2001 and 2007.

Considering the trends in employment of these occupations in sectoral terms, both cleaning and security employment *in manufacturing* actually shrank absolutely (cleaning employment by -4.14% per annum and security employment by -0.33% per annum). In contrast, cleaning and security employment in private services grew by 5.6% and 10.18% per annum respectively.

Table 1 below compares the trends in sectoral employment with and without the inclusion of these two occupations. Excluding security guards and cleaners, overall employment in private services actually grew at a significantly slower rate than employment in manufacturing: 1.50% in manufacturing as compared to just 1.01% in private services.

[4] These are other figures reported here concerning hours worked should be treated with caution. No responses were excluded from the analysis, even though in some cases the number of hours reported seems unrealistically high.

*Table 1: Annualised employment growth by sector, 2001- 2007 (%)*

| | Sector growth | Sector growth excluding cleaners | Sector growth excluding security guards | Sector growth excluding cleaners and security guards |
|---|---|---|---|---|
| Manufacturing | 1.363 | 1.498 | 1.369 | 1.504 |
| Private services | 1.638 | 1.477 | 1.195 | 1.005 |
| Public sector | 1.776 | 1.832 | 1.954 | 2.026 |
| Other | 0.068 | -0.098 | 0.070 | -0.097 |
| Total | 1.137 | 1.127 | 0.979 | 0.950 |

Derived from February 2001 and 2007 Labour Force Surveys.

This is surprising given the common perception in South Africa (particularly in policy circles) that employment growth in services has far outstripped that in manufacturing. There is little recognition of the extent to which this differential is driven by the disparate sectoral employment trends of specific occupations. The fact that services employment grew much slower than did manufacturing employment when security guards and cleaners are excluded, challenges the idea of the (private) services sector as the engine of employment creation in South Africa. This is especially to the extent that the growth in security and cleaning employment in the services sector is a function of the outsourcing of this work from elsewhere in the economy.

Unless growth is considered to be sector neutral, shifts in sectoral structure have implications for a country's rate of growth. The classical developmentalist literature and the Kaldorian-type heterodox literature has regarded the manufacturing sector as being imbued with special growth-enhancing characteristics that are not shared by other sectors (or at least not to the same extent). A number of studies, using a range of methodologies and analysing diverse cases, find some empirical support for Kaldor's laws and by implication for the particular importance of manufacturing in the growth process.[5] From this perspective deindustrialisation could be expected to pose problems for economic growth, especially for the sustainability of growth.

However, one of the hypotheses advanced in the international literature to explain the relative decline in manufacturing employment and rise in services employment is that this is merely a

[5] Recent studies include Leon-Ledesma (2000), Felipe (1998), Wells and Thirlwall (2003), Hansen and Zhang (1996), Bernat (1996), Pons-Novell and Viladecans-Marsal (1999), Harris and Lau (1998), Harris and Liu (1999), Jeon (2006), Diaz Bautista (2003), Libanio (2006), and Fingleton and McCombie (1998).

statistical illusion, which arises from the outsourcing-type reallocation of activities from manufacturing firms to service providers. To the extent that this holds, it would imply that the falling share of manufacturing employment and rising share of services employment is not a 'genuine' structural shift in these economies, and hence would not necessarily be expected to have negative implications for sustainable growth.

The balance of evidence (or at least of opinion) concerning developed countries appears to indicate that, while there has been some 'shifting around' of activities from manufacturing to services, this domestic outsourcing seems to account for a relatively small proportion of the overall decline in manufacturing and rise in services, and that there has in fact been a real structural shift in the economy from manufacturing to services. Rowthorn and Coutts (2004, p770) state that '…part of the decline in manufacturing employment may be merely a statistical artefact caused by shifting classification. However, it seems implausible that this accounts for more than a modest fraction of the huge recorded fall in the share of manufacturing employment in advanced economies over the past thirty years.'

Several studies in the field of structural change analysis use input-output data to analyse the extent of intersectoral outsourcing in the context of changes in sectoral structure.[6] This literature draws on the seminal contribution of Momigliano and Siniscalco (1982), who use Italian input-output data to show that much of the growth in services employment derives from increasing demand for producer services from the manufacturing sector.

This methodology has been extended so as to analyse intersectoral outsourcing, by looking at indicators such as the changes in the business services that go as intermediate inputs into manufacturing. While this yields valuable insights into the nature of sectoral change, the methodology and the aggregated nature of the data limit the extent to which the changes identified can be conclusively attributed to outsourcing as opposed to other forms of structural change (such as increasing demand from manufacturing for particular types of service inputs). Furthermore, restrictive assumptions required include constant returns to scale, constant technical coefficients in manufacturing, and constant prices of business services in wage units (Montresor and Vitucci Marzetti (2006, p7)). These assumptions might

[6] See for instance Montresor and Vitucci Marzetti (2006), Dietrich (1999), Gregori (2000), and McCarthy and Anagnostou (2004).

be considered particularly demanding in a developing economy such as South Africa, in which various structural changes are occurring simultaneously with outsourcing.

There is currently little evidence available in South Africa (or in other middle-income countries) as to how much of the apparent shift in employment between manufacturing and services can be explained by outsourcing. This paper addresses precisely this issue in the empirical analysis presented in section 3.

### *2.2 Outsourcing*

Outsourcing is a form of externalisation of employment. Activities previously undertaken in-house are contracted out, typically to another company which either employs workers directly or sub-contracts the work to a third company (although the activities may also be outsourced to individuals). An employment relationship with the workers performing the activities is replaced – from the perspective of the original employer – by a commercial relationship with the service provider.

One of the motivations typically cited for outsourcing is a move in favour of firms concentrating on their 'core competencies' and hiving off 'non-core' service activities. The definition of what is 'core business' is of course variable and subjective. With reference to the increasing outsourcing of designated 'non-core' operations in the South African mining industry, Pillay (1999, p194) notes that 'the definition of "core" is so malleable that it has become meaningless'.

Another explanation for outsourcing is that it is purported to be cost-saving insofar as specialised external companies can provide the services at lower costs than would be the case in-house, for instance due to specialisation and economies of scale. Service companies may develop expertise in solving similar types of problems across firms, more effectively than can an in-house services department. Furthermore, outsourcing is considered to increase firms' flexibility, especially as it allows services to be brought in according to actual needs, hence minimising costly idle in-house capacity.

The trend towards outsourcing is also traced to changes in the manufacturing process itself, and the resultant need for increasingly sophisticated specialised service inputs; and similarly

an increase in the demand for highly technology- and skills-intensive service inputs. Such inputs are more costly to maintain in-house than service inputs might previously have been.

Outsourcing can be regarded as a form of risk management, in terms of outsourcing of the risks associated with employment, insofar as these are unpredictable and have potentially negative consequences. This might be seen (by employers) as especially important in a country such as South Africa, in terms of labour management issues related to industrial action as well as health and safety (including time loss and other costs associated with chronic disease).

In the case of activities that are relatively labour-intensive, and especially those that are intensive in low-skilled labour, cost-cutting is likely to be an especially important driver of outsourcing. The 'benefits' of such outsourcing would be expected to derive from cost-cutting associated with labour costs. This could take the form either of reducing the number of employees or reducing wage or non-wage labour costs. Both activities being analysed here – cleaning and security guarding – are labour-intensive and specifically low- or semi-skilled labour-intensive.

Bhagwati (1984) argues in his seminal paper that services which splinter off from manufacturing are technically progressive and likely to be relatively capital intensive. He argues that this is because services arising from specialisation are technically progressive, reflecting economies of scale, as well as being part of a dynamic process of the division of labour and economic change. On the other hand, services that are left behind after the splintering off of goods from services tend to be technically unprogressive and more likely to be labour intensive.

However, Bhagwati's arguments do not necessarily hold, or at least not any more. With a shift of businesses to focus increasingly on 'core' activities, some of the services that 'splinter off' from manufacturing are not necessarily technologically progressive. Businesses may be motivated not only by narrow costs, but also by a desire to be rid of 'distracting problems', as well as wanting to be free from issues of labour legislation (which would be particularly pertinent in relatively labour-intensive activities). The activities analysed in this paper as examples of intersectoral outsourcing – cleaning and security services – are neither technically progressive nor capital intensive.

To the extent that costs can be cut through outsourcing, we can identify two basic sources of such savings (that is, savings to the original employer). Firstly, what we might term a 'distributional transfer'. Outsourcing can facilitate a cutting of the wage bill, either through reducing the number of workers or through reducing total remuneration per worker. These 'savings' or at least a portion thereof are retained by the original employer that outsourced the service. A second broad source of cost-cutting through outsourcing is through 'x-efficiency gains'. This refers to the ability of the companies to which services are outsourced to provide the services more efficiently than were the in-house units. This advantage may derive from the fact that the service provider focuses exclusively on the particular service (such as cleaning) to a greater extent than the in-house unit was able to do. X-efficiency gains may also derive from economies of scale, insofar as the service provider is producing the service (for a number of clients) on a larger scale than it was previously undertaken in any single company.

Both of these potential channels of cost-cutting through outsourcing are likely to be associated with some degree of net reduction in employment. Increasing labour productivity will prima facie lead to a fall in employment in the absence of a commensurate increase in output. Outsourcing might potentially lead to some increase in demand for services such as cleaning and security through a reduction in transaction costs. While there are in practice multiple factors determining the net outcome of these processes in terms of the net effect on employment, it is unlikely that outsourcing would actually raise employment.

Increasing economies of scale through specialised service providers are also likely to reduce net employment levels, through two additional channels. Firstly, economies of scale are likely to be associated with labour-displacing capital intensification, as capital equipment which may be unaffordable or inefficient for an in-house department may be affordable or efficient for a company specialising in providing that service to a number of clients. Secondly, economies of scale may mean that certain functions can be rationalised as they are no longer required to be simultaneously duplicated in each unit.

The industrial organisation of the business services industry is also relevant to the distributional consequences of outsourcing. Activities such as cleaning have low entry costs and are conducive to a proliferation of small firms in tight competition for outsourcing

contracts. The rents in these activities are prone to being squeezed by large firms contracting out these services.

The awarding of contracts for outsourced services through a competitive tendering process, as occurs in the public sector and in some private sector companies, tends to put continuous downward pressure on costs. In the types of activities being outsourced, wages are a key cost component and outsourcing is likely to push wages down.

In South Africa there is a particular hostility from employers to what are perceived as overly 'rigid' labour laws (although these laws do not appear to be particularly 'rigid' when held up against those in many other countries). There is also a racial character of the labour market which is specific to South Africa. This derives from the country's Apartheid history and of current labour market demographics in which employers are disproportionately white and employees (especially low- and semi-skilled employees) are disproportionately black. These dynamics may favour the outsourcing of labour-intensive activities (especially those intensive in the use of low-skilled labour).

Business in South Africa often complains of what is referred to as the 'hassle factor' associated with managing labour and meeting the supposedly onerous requirements of the country's labour legislation. The 'hassle factor' is purported to include elements such as management time absorbed in labour disputes and protracted dismissal proceedings, which inflate the 'transaction costs' of employment. This is often cited (in anecdotal evidence or in policy debates) as leading companies to maintain lower levels of employment than would otherwise be the case.

Whether such concerns on the part of employers are real or perceived, they are likely to encourage the outsourcing of certain activities, in particular labour-intensive activities and especially those perceived as peripheral to the core activities of the firm. Cleaning and security services are prime examples of such activities. Other such activities include catering and gardening services.

Outsourcing is often viewed favourably (by employers) in South Africa as a way of circumventing labour legislation. Different provisions apply in the labour legislation to situations where the employee is defined as an independent contractor. Furthermore, enforcement is generally poorer in such a scenario to the traditional employment relationship.

Employers can also benefit from the ambiguity of the employment relationship where outsourcing to a subcontracting company gives the original employer an arms-length relationship with the workers. Benefits can also derive for the employer in the ambiguity of lines of employer responsibility and accountability deriving from the triangulated structure.

Instead of a bilateral relationship between an employer and employee, in a situation of outsourcing there is a triangular relationship between the worker, the direct employer (which is the service provider) and the client company which has contracted out to the service provider and in whose workplace the worker is typically physically located. This often results in a worker employed in an outsourced function being accountable to both the direct employer (i.e. the service provider) as well as to the client company where the worker actually performs the labour.

Outsourcing tends to shift the balance of class forces in favour of capital and away from organised labour. This can be both a consequence of outsourcing and a motivation for implementing it. One reason for this is that the division of a workforce into different 'layers' of workers – those directly employed and those employed by outside service providers – tends to weaken union organisation and undermine the likelihood of united industrial action.

Further, the position or workers tends to be weaker in a situation of outsourcing, in that an in-house union typically has little to do with the organisation or protection of outsourced functions even if these are physically located in the same workplace. In the absence of outsourcing, by contrast, relatively vulnerable occupations such as cleaners located in a factory context may benefit from the organised power of other workers in the factory.

Union density rates are lower in private services than in manufacturing or the public sector in South Africa. 35% of manufacturing workers report that they are union members, as compared to just 23% in private services and 60% in the public sector.[7] The private services sector is generally more difficult to organise in trade unions than is manufacturing or the public sector. Workplaces in the private services sector are on the whole smaller, making them generally less conducive to high rates of unionisation than workplaces in which a high number of workers are concentrated. Further, the nature of the work and workplace

[7] Author's calculations derived from March 2007 Labour Force Survey.

organisation in the services sector typically lends itself less to union organisation than does work in the factory.

Even for the same type of work, unionisation is generally more difficult and union density lower in outsourced service providers. The fragmentation of the labour force in such a situation, as well as the relatively lower job security and stability of outsourced workers, contribute to this.

For specific occupations of interest, 48% of cleaners in manufacturing and 49% of cleaners in the public sector are union members, whereas the union density of cleaners in private services is just 20%. In the case of security guards, union density in the private services sector is also significantly lower than elsewhere: 38% of security guards employed in private services are union members, compared to 41% in the public sector and 56% in manufacturing.

Trade unions are generally opposed to or have strong concerns around outsourcing. Pillay (1999, p193) argues that in the experience of the National Union of Mineworkers (Num) in South Africa, subcontracting and outsourcing have brought job losses, lower wages, inferior working conditions, job insecurity, ultra-exploitation, lower health and safety standards, and lower environmental standards. He criticises the use of sub-contractors that 'escape the law and treat workers like units of labour (i.e. non-humans) that can be replaced at any moment', noting that 'even well established contractors, with more decent labour standards, usually come in after massive retrenchments [and that] the re-hired workers do not enjoy the job security and benefits they had before'.

Outsourcing from the public sector to private service providers has specific explanations and dynamics in addition to the issues pertaining to outsourcing in general. At the ideological level this type of outsourcing tends to be driven or at least justified by a notion of the 'core business' of the state and a preference for a smaller public sector, an emphasis on market-oriented notions of efficiency and the 'bottom line', as well as a view that efficiency gains (reflected for instance in fiscal benefits) would accrue from such a shift, and a broad shift towards the commercialisation of the state. Such an approach suggests that 'non-core'

functions of the state should be turned over to the market.[8] While wholesale privatisation of state enterprises would be one form through which could occur, outsourcing of particular functions is another form in which activities previously performed by the state are now contracted out to the private sector.

Trade unions in South Africa have been particularly strongly opposed to outsourcing from the public sector to the private sector. The main trade union federation in South Africa, the Congress of South African Trade Unions (Cosatu), defines outsourcing as a form of privatisation (Cosatu 2001b) and has undertaken national general strikes against all forms of privatisation with outsourcing explicitly mentioned in the notice of strike action (Cosatu 2001a).

In many countries (including South Africa), low-skilled employees tend to be better paid in the public sector than are their counterparts in similar occupations in the private sector. In the South African case this derives in part from the strength of public sector trade unions, in the emphasis placed by these unions on lifting the wages of their lowest-paid members, and also from a stated intention of the government (post-1994) to narrow the wage gap.

Cost-cutting relating to total unit labour costs may also relate to both monetary and non-monetary benefits and conditions of employment. Labour security is significantly lower outside of the public sector, and violations of labour legislation are far more likely in the private services sector than in the public sector (given that it is government that is also responsible for upholding labour legislation).

By way of background to the empirical analysis that follows, we have discussed outsourcing as a form of corporate restructuring, which has implications *inter alia* for the sectoral structure of employment. The specific occupations of interest in this analysis – cleaners and security guards – are not particularly dynamic or technologically progressive; but they are important sources of labour absorption in South Africa. Extensive outsourcing has occurred

[8] The Congress of South African Trade Unions (Cosatu) has characterised the process of 'restructuring for a minimalist, managerialist state' that has been followed especially since 1999 as including the element that 'government should take on only "core" functions, which no-one else can do. "Non-core" functions in the public service, local government and state-owned enterprise should be privatised or outsourced. This strategy will establish a "contracting state," where the government as far as possible outsources functions rather than using its own capacity.' (Cosatu 2000)

in developed countries over several decades, but has followed more recently in South Africa (and South Africa might actually be 'lagging' behind other middle-income countries in this respect). While outsourcing in South Africa is probably following international trends in many respects, there are particular dynamics relating to the country's labour market structure and regulatory regime that are relevant to outsourcing, particularly the outsourcing of labour-intensive activities such as cleaning. The empirical quantifications derived in the empirical analysis give some sense as to how much intersectoral outsourcing has affected trends in the sectoral composition of employment in South Africa in recent years.

# 3 EMPIRICAL ANALYSIS OF OUTSOURCING

## *3.1 Introduction*

In the empirical analysis that follows below we focus on the intersectoral outsourcing of cleaners and security guards. The analysis is based on a cross-referencing of self-reported sectoral and occupational data, using the occupational disaggregation of employed people in conjunction with the sector which they are reported in. The occupational classification is at 4-digit level, based on the International Standard Classification of Occupations (ISCO 88), and the sectoral coding is at 2-digit level based on the Standard Industrial Classification of all Economic Activities (ISIC 1993).

In the next section we describe the data sources used in the empirical investigation of outsourcing. Thereafter, we report descriptive statistics regarding some pertinent characteristics of the employment of cleaners and security guards by sector, specifically in terms of demographics, earnings, and working hours.

We then present three parts of the empirical analyses of the trends in outsourcing. The first is an examination of trends in the 'other business services' subsector of services, which is where the service providers to which activities are outsourced are generally classified. The second is a dynamic decomposition of changes in sectoral employment of cleaners and security guards. Thirdly, we compute projections of growth rates and levels of employment

by sector had there not been intersectoral outsourcing of cleaners and security guards in the period 2001-2007.[9]

### *3.2 Data*

We use primary household and labour force survey datasets to investigate the outsourcing of cleaners and security guards, in particular the extent to which this outsourcing can account for the apparent shift in employment between manufacturing and services and also between the public sector and private services.

Data for the period 1997-1999 is from the October Household Survey (OHS) and the Labour Force Survey (LFS) for 2001-2007. Both surveys are conducted by Statistics South Africa (SSA), the country's official statistical agency.[10] The surveys are nationally representative and are used to calculate official labour market statistics.[11]

The OHS was conducted annually between 1995 and 1999. The LFS has been conducted biannually from 2000 onwards, and we use the March surveys here (the September 2007 data is not yet available).[12]

The periods of analysis are limited by the availability of data that is broadly comparable. Although there is OHS data for 1995 and 1996, these years are generally not considered comparable either with each other or with subsequent years. The February 2000 LFS is omitted from the study as it was a pilot study based on a reduced sample frame.

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[9] Note that we do not analyse any net reduction in the employment of these occupations across the economy associated with outsourcing (for instance, job losses that may arise when an activity is outsourced and the company receiving the contract employs fewer workers than were previously employed in-house). Such an analysis is not possible with the available data. The concern of this paper is with the effects of intersectoral outsourcing on the sectoral employment structure of the economy.

[10] The full datasets used for this study were accessed through the South African Data Archive (SADA).

[11] The 1997 OHS dataset (limited to people 15 years and older) which is used in this analysis contains 89 619 original individual records and the 1999 OHS contains 70 992 original individual records. The 2001 and 2007 LFS contain 72 923 and 72469 original individual records respectively. All surveys were based on a sampling of 30 000 households. The official weights provided by Statistics South Africa (based on census data) were used in each case to derive the aggregate figures.

[12] Where we refer in this study to 2001 or 2007 data, this refers to the February/March surveys.

The OHS and LFS data are not directly comparable and cannot be accurately treated as a single series due to differences in sampling and questionnaires. The analysis is thus presented separately for the two periods 1997-1999 and 2001-2007.

The overall decade-long period for which data are available is unfortunately shorter than would be ideal for this analysis. There is likely to have been considerable outsourcing prior to 1997, which would be missed here, and hence this analysis in all probability underestimates the extent of intersectoral outsourcing. To the extent that this earlier outsourcing was uneven between sectors, those occupations or sectors in which the bulk of outsourcing occurred at a relatively earlier stage will appear to have outsourced less in the period being analysed in this study.

The data includes both the self-employed and those working for someone else, and covers both the formal and informal sectors (as it is based on surveys of people rather than of firms).

Unlike in the official reports published by SSA on the basis of the LFS data, we do not exclude people above 65 years from the analysis. The reason is that for the purposes of this study we are interested in the shifts in the number of people actually employed, and not in the total size of the labour force or in rates of unemployment. This results in the employment figures reported here being slightly higher than those published by SSA.[13]

### *3.3 Selected descriptive statistics*

Cleaners and security guards are both significant employment categories in South Africa. 3% of all employed people work as security guards. 10% of all employment is as cleaners, although most of these are in private households (which are not an explicit category of our analysis here); excluding private households 3.7% of employment is as cleaners.

In terms of the demographics of these occupations, 86.7% of security guards are male.[14] 88.3% of security guards are African, 7% Coloured, 1.1% Indian, and the remaining 3.7% White. The average age of security guards is 33.9 years (median 32 years). 47.7% have Grade

[13] For instance, SSA reports total employment of 12 648 000 (a round figure, the data actually shows 12 648 198) for March 2007. Without excluding those aged above 65 years, employment would be counted as 12 898 480.

[14] All figures in this paragraph are author's calculations from March 2007 LFS.

12 (completion of schooling) or higher qualifications. In the case of cleaners, 83.4% are female. 90.3% are African, 8.7% Coloured, 0.7% Indian and just 0.3% White. Cleaners have an average age of 40.4 years (median 40 years). 14.3% have completed school or higher.[15]

The employment trends of cleaners and security guards reviewed earlier need to be considered in relation to the possibility that there has been a shift in the distribution of full- and part-time work. Increasing prevalence of atypical employment within these occupations might be associated with increasing use of part-time workers, which would inflate the apparent employment growth (since anyone who works for even an hour a week is counted as employed, as per the LFS questionnaire and official labour statistics).

In section 2.1 we noted that average hours worked by both cleaners and security guards (in total across the economy) fell between 2001 and 2007, such that the growth rates of total hours worked in these occupations is below the growth rate of total employment in these occupations. As can be seen from tables 2 and 3 below, average weekly hours worked by cleaners fell slightly between 2001 and 2007 in all three sectors of interest.[16] In the case of security guards, working hours only fell for those in private services.

We also compare for 2001 and 2007 the percentage of cleaners and security guards working less than a forty hour week, as well as those working less than a thirty hour week. Somewhat surprisingly, relatively fewer workers were employed on a less than full-time basis in 2007 than in 2001. Note that the relevant question in the LFS, from which this data is gleaned, refers to the number of hours worked in the respondent's *main* job, so even if several part-time jobs were held this would not necessarily explain the decline in the proportion of people working in less than full-time employment. There might however have been some ambiguity or lack of clarity around responses to this question. Further information, possibly at a micro level, might shed further light on the full-time/part-time trends in employment of security

[15] As a benchmark for comparison, we also provide the same demographic breakdown for all employed people in South Africa. 57.5% are male. In terms of race, 70% are African, 10.9% Coloured, 3.2% Indian, and 15.6% White. The average age of people in employment is 38.1 years (median 36 years), and 45.1% have completed Grade 12 or higher.

[16] As pointed out previously, all data reported here on hours worked should be interpreted with caution. In some cases the number of hours reported seems unrealistically high, but these responses were not excluded from the analysis. The figures presented here may thus overestimate the actual number of hours worked.

guards and cleaners. From the available data, however, no clear shift towards part-time employment is discernable.

*Table 2: Weekly hours worked by cleaners, by industry, 2001-2007*

| | Mean hours | | % working <40 hours | | % working <30 hours | |
|---|---|---|---|---|---|---|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Manufacturing | 45.3 | 44.2 | 9.29 | 6.36 | 5.6 | 3.68 |
| Private services | 46.5 | 45.4 | 14.37 | 11.26 | 7.39 | 4.61 |
| Public sector | 45.5 | 41.7 | 14.31 | 18.24 | 6.21 | 7.2 |

Derived from March 2007 LFS.

*Table 3: Weekly hours worked by security guards, by industry, 2001-2007*

| | Mean hours | | % working <40 hours | | % working <30 hours | |
|---|---|---|---|---|---|---|
| | 2001 | 2007 | 2001 | 2007 | 2001 | 2007 |
| Manufacturing | 56.9 | 67.9 | 5.9 | 0 | 5.9 | 0 |
| Private services | 58.8 | 56.9 | 4.36 | 4.6 | 2.87 | 1.43 |
| Public sector | 53.6 | 56.9 | 7.35 | 1.89 | 2.87 | 0.47 |

Derived from March 2007 LFS.

Tables 4 and 5 below compare across industries the (self-reported) earnings levels of cleaners and security guards. Mean and median earnings are shown for each of manufacturing, private services, and the public sector. Earnings in the services sector are further disaggregated into those in the 'other business services' subsector (in which service providers such as cleaning or security companies are typically classified) and those in the rest of the private services sector.[17]

Both cleaners and security guards earn more when they are located in manufacturing than in the private services sector. Cleaners in the public sector also earn more than their counterparts in the private sector, although this does not hold in the case of security guards.

We also compare earning within the subsectors of private services. Firms that provide services such as cleaning and security are generally located in the 'other business services' subsector of the 'Financial intermediation, insurance, real estate, and business services' sector (Industry 8) of services. Security guards in the 'other business services' subsector of private services earn less than do security guards in the rest of the private services sector.

[17] Note that the numbers shown are not the full sample of each occupation in that industry, as not all respondents disclosed their earnings. Further, some respondents preferred to report earnings within designated brackets, and these responses are not included in these comparisons but analysis of these brackets across industries confirms the findings discussed here.

Surprisingly, in the case of cleaners those located in 'other business services' report higher earnings than do cleaners in the rest of private services.

*Table 4: Comparison of earnings of cleaners by industry, 2007*

| Industry | Mean | Median | N | Std. Dev. |
|---|---|---|---|---|
| Manufacturing | 1 639.14 | 1 500 | 29 499 | 795.60 |
| Private services | 1 429.99 | 1 300 | 205 805 | 954.33 |
| 'Other business services' | 1 529.00 | 1 500 | 73 873 | 633.79 |
| Industry 8 except 'other business services' | 1 583.01 | 1 300 | 11 455 | 637.13 |
| Private services except 'other business services' | 1 374.55 | 1 200 | 131 932 | 1 089.59 |
| Public sector | 2 088.58 | 2 000 | 114 371 | 1 147.78 |

Derived from March 2007 LFS. Figures are in South African Rands and are per month.

*Table 5: Comparison of earnings of security guards by industry, 2007*

| Industry | Mean | Median | N | Std. Dev. |
|---|---|---|---|---|
| Manufacturing | 2 247.01 | 2 400 | 4 633 | 816.80 |
| Private services | 2 128.41 | 1 800 | 284 481 | 1 318.19 |
| 'Other business services' | 2 119.04 | 1 850 | 266 518 | 1 281.37 |
| Industry 8 except 'other business services' | 4 510.57 | 6 000 | 4 088 | 2 163.04 |
| Private services except 'other business services' | 2 267.52 | 1 700 | 17 963 | 1 771.24 |
| Public sector | 2 125.06 | 1 500 | 20 293 | 1 373.64 |

Derived from March 2007 LFS. Figures are in South African Rands and are per month.

### *3.4 Trends in employment in the 'other business services' subsector of services*

We begin the empirical analysis of outsourcing by analysing the distribution of employment across the subsectors of private services. Specifically, we examine trends in employment in the 'Business activities not elsewhere classified' subsector of industry 8. This subsector – which we refer to here for brevity as 'other business services' – is where specialised service providers to other businesses operating in any sector of the economy would generally be categorised[18]. It would include companies providing cleaning or security services to client companies. Changes in the degree of concentration of employment in this particular subsector of services, and trends in this regard, can thus be suggestive in terms of outsourcing.

Tables 6–11 below examine some relevant trends in the 'other business services' category. We examine the periods 1997-1999 and 2001-2007 separately given the incomparability of

[18] Relevant activities classified in this subsector include: labour recruitment, selection, referral and provision of staff and placement; activities of employment agencies and recruiting organisations; hiring out of workers (labour-broking activities); investigation, surveillance activities, guard and other protective activities for individuals and property and security activities; transport of valuables; providing protection through guard dogs, armoured cars, bodyguard, watchman activities, store detective; and building and industrial plant cleaning activities.

the data sources discussed earlier. For each period the trends in total 'other business services' employment and in cleaners and security guards employed in the 'other business services' subsector are shown.

If the growth of a certain occupation in the services sector is disproportionately in the 'other business services' subsector of services, this might suggest growth associated with the outsourcing of activities to service providers as opposed to a generalised growth of services employment. For both of the occupations analysed, employment of that occupation in the 'other business services' subsector is thus analysed both as a percentage of total services employment and as a percentage of total employment, over time.

Over both periods we see that employment in 'other business services' increases as a share of both ISIC sector 8 (which 'other business services' are classified within) and of private services in total. Focussing specifically on cleaners and security guards, an increasing concentration of these occupations in 'other business services' is evident. The employment of cleaners in 'other business services' as a percentage of all cleaners employed in private services jumps from 13.96% in 1997 to 25.18% in 1999, and from 26.82% in 2001 to 35.71% in 2007. The percentage of security guards employed in private services that are located in 'other business services' rises to an extremely high rate of 93.5% by 2007.

The concentration of the employment of cleaners and security guards within the 'other business services' subsector strongly suggests the increasing prevalence of outsourcing of these occupations.

*Table 6: Trends in employment in 'other business services', 1997-1999*

| | 1997 | 1999 |
|---|---|---|
| 'Other business services' employment as % ISIC 8 employment | 31.79 | 33.14 |
| 'Other business services' employment as % total private services | 7.65 | 10.80 |

Figures derived from OHS 1997 and 1999 data.

*Table 7: Trends in employment in 'other business services', 2001-2007*

| | 2001 | 2007 |
|---|---|---|
| 'Other business services' employment as % ISIC 8 employment | 30.35 | 47.38 |
| 'Other business services' employment as % total private services | 10.82 | 11.97 |

Figures derived from LFS 2001 and 2007 data.

*Table 8: Trends in cleaners employed in 'other business services', 1997-1999*

| | 1997 | 1999 |
|---|---|---|
| Cleaners in 'other business services' as % of cleaners in ISIC 8 | 50.95 | 74.16 |
| Cleaners in 'other business services' as % of cleaners in private services | 13.96 | 25.18 |

Figures derived from OHS 1997 and 1999 data.

*Table 9: Trends in cleaners employed in 'other business services', 2001-2007*

| | 2001 | 2007 |
|---|---|---|
| Cleaners in 'other business services' as % of cleaners in ISIC 8 | 69.16 | 86.17 |
| Cleaners in 'other business services' as % of cleaners in private services | 26.82 | 35.71 |

Figures derived from LFS 2001 and 2007 data.

*Table 10: Trends in security guards employed in 'other business services', 1997-1999*

| | 1997 | 1999 |
|---|---|---|
| Security guards in 'other business services' as % security guards in ISIC 8 | 86.46 | 98.10 |
| Security guards in 'other business services' as % security guards in private services | 70.59 | 87.54 |

Figures derived from OHS 1997 and 1999 data.

*Table 11: Trends in security guards employed in 'other business services', 2001-2007*

| | 2001 | 2007 |
|---|---|---|
| Security guards in 'other business services' as % security guards in ISIC 8 | 97.74 | 98.74 |
| Security guards in 'other business services' as % security guards in private services | 84.20 | 93.50 |

Figures derived from LFS 2001 and 2007 data.

### *3.5 Decomposition analysis*

In the second part of the empirical analysis we use a dynamic decomposition method to analyse the changes in the employment of particular occupations within each sector. Changes in employment in a given occupation and sector – for example, the change in the number of security guards employed in manufacturing between 2001 and 2007 – are decomposed into four components. These components are the changes in employment in the sector and occupation associated with (1) changes in the share of the occupation within the total employment of the sector; (2) changes in the share of the sector within the occupation; (3) changes in the total employment of the sector; and (4) changes in the total employment in the occupation respectively.

We define:

$L_t^j$ as the number of jobs in occupation j at time t, where $j = 1, 2,\ldots n$;

$L_t^z$ as the number of jobs in sector z at time t, where z = $1, 2,\ldots m$;

such that $L_t = \sum_{j=1}^{n} L_t^j = \sum_{z=1}^{m} L_t^z$;

$L_t^{jz}$ as the number of jobs in occupation j in sector z at time t;

such that $L_t^{jz} \equiv \sqrt{\frac{L_t^{jz}}{L_t^z}\frac{L_t^{jz}}{L_t^j} L_t^z L_t^j}$

For simplicity of presentation let $\sqrt{\frac{L_t^{jz}}{L_t^z}} = \delta_t$, $\sqrt{\frac{L_t^{jz}}{L_t^j}} = \lambda_t$, $\sqrt{L_t^z} = \ell_t^z$, and $\sqrt{L_t^j} = \ell_t^j$;

such that $L_t^{jz} \equiv \delta_t \lambda_t \ell_t^z \ell_t^j$.

Then, by simple algebraic manipulation, the change in the number of workers in a given sector and occupation over any time period h can be decomposed into the following four components:

$$\Delta L_{jz} =$$

$$\underbrace{\Delta\delta\left[\frac{\lambda_{t+h}\ell^z_{t+h}\ell^j_{t+h} + \lambda_t\ell^z_t\ell^j_t}{4} + \frac{\lambda_{t+h}\ell^z_{t+h}\ell^j_t + \lambda_{t+h}\ell^z_t\ell^j_{t+h} + \lambda_{t+h}\ell^z_t\ell^j_j + \lambda_t\ell^z_{t+h}\ell^j_{t+h} + \lambda_t\ell^z_{t+h}\ell^j_t + \lambda_t\ell^z_t\ell^j_{t+h}}{12}\right]}_{\textit{sector share effect}}$$

$$\underbrace{+\Delta\lambda\left[\frac{\delta_{t+h}\ell^z_{t+h}\ell^j_{t+h} + \delta_t\ell^z_t\ell^j_t}{4} + \frac{\delta_{t+h}\ell^z_{t+h}\ell^j_t + \delta_{t+h}\ell^z_t\ell^j_{t+h} + \delta_{t+h}\ell^z_t\ell^j_t + \delta_t\ell^z_{t+h}\ell^j_{t+h} + \delta_t\ell^z_{t+h}\ell^j_t + \delta_t\ell^z_t\ell^j_{t+h}}{12}\right]}_{\textit{occupation share effect}}$$

$$\underbrace{+\Delta\ell_z\left[\frac{\delta_{t+h}\lambda_{t+h}\ell^j_{t+h} + \delta_t\lambda_t\ell^j_t}{4} + \frac{\delta_{t+h}\lambda_{t+h}\ell^j_t + \delta_{t+h}\lambda_t\ell^j_{t+h} + \delta_{t+h}\lambda_t\ell^j_t + \delta_t\lambda_{t+h}\ell^j_{t+h} + \delta_t\lambda_{t+h}\ell^j_t + \delta_t\lambda_t\ell^j_{t+h}}{12}\right]}_{\textit{sector size effect}}$$

$$\underbrace{+\Delta\ell_j\left[\frac{\delta_{t+h}\lambda_{t+h}\ell^z_{t+h} + \delta_t\lambda_t\ell^z_t}{4} + \frac{\delta_{t+h}\lambda_{t+h}\ell^z_t + \delta_{t+h}\lambda_t\ell^z_{t+h} + \delta_{t+h}\lambda_t\ell^z_t + \delta_t\lambda_{t+h}\ell^z_{t+h} + \delta_t\lambda_{t+h}\ell^z_t + \delta_t\lambda_t\ell^z_{t+h}}{12}\right]}_{\textit{occupation size effect}}$$

This decomposition is exact (i.e. the four components sum exactly to the change in employment in the occupation and sector being analysed). Midpoint weights are used, so no particularly weighting is given to either the initial or final periods. Note that the decomposition is essentially an accounting exercise and does not analyse the causal

relationships between the four factors and the change in employment nor the relationships amongst the four factors.

By way of interpretation, for instance where occupation j is security guards and sector z is manufacturing, the four components of the change in employment of security guards in manufacturing are as follows.

- The sector share effect is the change in the employment of security guards in manufacturing associated with the change in the *share of manufacturing employment that is as security guards* (i.e. with change in the share of the occupation in the sector).

- The *occupation share effect* is the change in the employment of security guards in manufacturing associated with the change in the *share of all security guards that are employed in the manufacturing sector* (i.e. with change in the share of the sector in the occupation).

- The *sector size effect* is the change associated with change in the *overall level of manufacturing employment*.

- Finally, the *occupation size effect* is the change associated with change in the *total number of security guards* employed across the economy.

This analysis sheds light on how much of the decline in the employment of security guards in manufacturing or growth of security guards in private services can be accounted for by each of the four components. For instance, if large proportions of the decline in employment of security guards in manufacturing were found to be accounted for by declines in the share of security guards in total manufacturing employment (the sector share effect) and in the share of all security guards employed in manufacturing (the occupation share effect), even when sector size and occupation size are factored in, with the converse result for private services, this would be strongly suggestive of outsourcing as an explanation for these employment shifts. If on the other hand the decline in employment of security guards in manufacturing were associated with an overall decline in manufacturing employment or in the overall employment of security guards, this would suggest that outsourcing were not the primary factor.

The results from this part of the empirical analysis are presented graphically in figures 2 – 7 below for the period 2001-2007. The results for both periods (1997-1999 and 2001-2007) are tabulated thereafter. For cleaners and security guards in each of manufacturing, private services, and the public sector, we show the four components of the change in employment (i.e. the sector share effect, occupation share effect, sector size effect, and occupation size effect). These of course sum to the net change in employment of that occupation in that sector.

Figure 2 shows that the fall in employment of cleaners in manufacturing is accounted for almost equally by the negative sector share effect (associated with the decline in the share of cleaners in total manufacturing employment) and the negative occupation share effect (associated with the decline in the share of cleaners that are located in manufacturing), with small positive contributions from the sector size effect and the occupation size effect.

This contrasts with cleaners in private services (figure 3), in which all of the four components are positive. It is however significant to note that the single largest 'contributor' to the increase in the employment of cleaners in private services is the occupation share effect, pointing to the importance of the reallocation of cleaners from other sectors to private services in accounting for the increase in employment of cleaners in private services.

In the case of the public sector (see figure 4), it is this very component – the occupation share effect – which is the only *negative* contributor to employment of cleaners (albeit a small one). This suggests that the increase in employment of cleaners in the public sector would have been higher than it actually was, had there not been intersectoral outsourcing away from the public sector towards private services.

Note that the occupation size effect in relatively small in the decomposition of cleaning employment. This derives from the fact that the overall growth in cleaning employment was rather modest.

*Figure 2: Cleaners in manufacturing, 2001-2007*

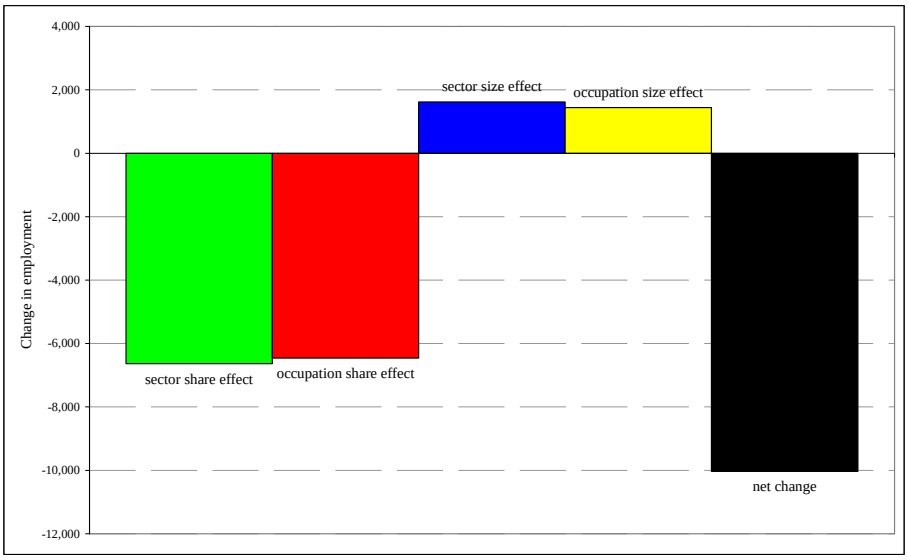



*Figure 3: Cleaners in private services, 2001-2007*

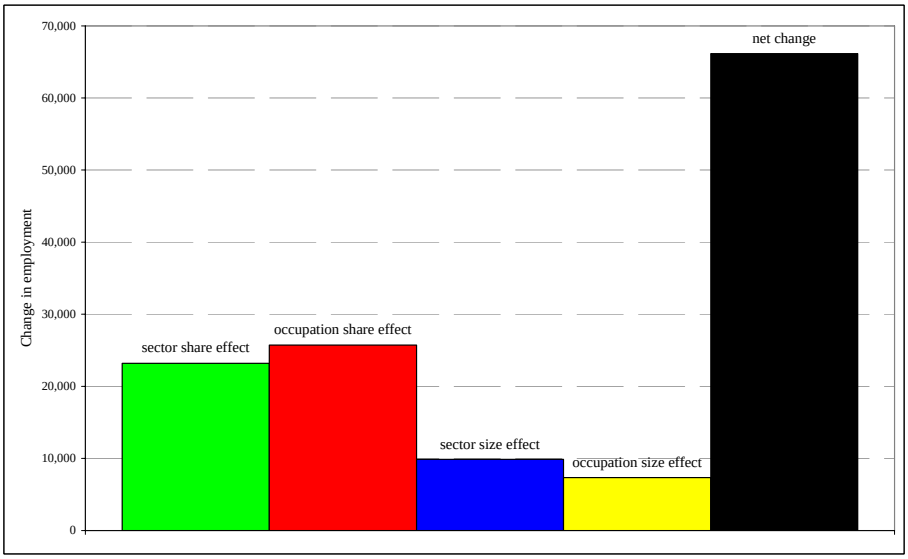
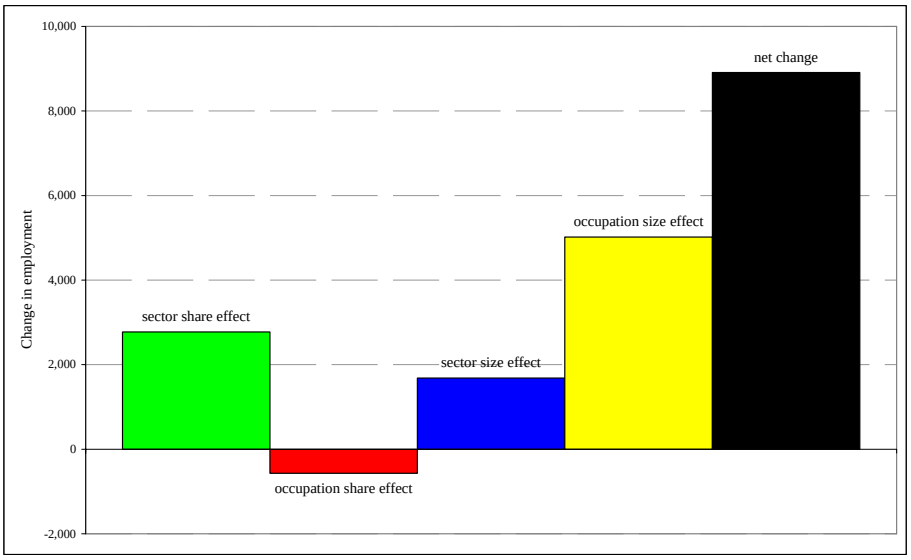


*Figure 4: Cleaners in public sector, 2001-2007*




The results are similar in the case of security guards, but with some noteworthy differences. Both the sector share and occupation share effects are negative for manufacturing (as they were in the case of cleaners), as can be seen in figure 5 below. However, the occupation share effect is far more significant in the case of security guards, and almost exclusively accounts for the net fall in employment of security guards in manufacturing. A similar picture obtains in the public sector (shown in figure 7).

The negative sector share effects obtaining for both manufacturing and the public sector are particularly striking given that total employment of security guards grew over six fold as rapidly as total employment growth over the period of analysis. The fact that security guards accounted for a decreasing share of sectoral employment in manufacturing and the public sector is thus strongly suggestive of the large-scale outsourcing of security guards from these sectors. Outsourcing of security guards from the public sector is significantly more pronounced than the outsourcing of cleaners from the public sector.

All four components are positive for private services (see figure 6), as was the case with cleaners in private services. In the case of security guards, however, it is the sector share and occupation size effects that are most important in accounting for the net increase in employment.

*Figure 5: Security guards in manufacturing, 2001-2007*

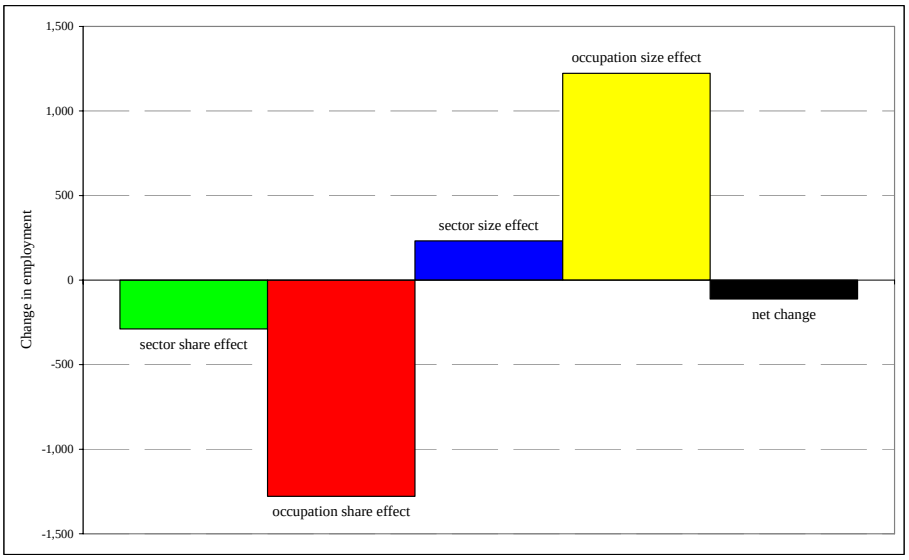



*Figure 6: Security guards in private services, 2001-2007*

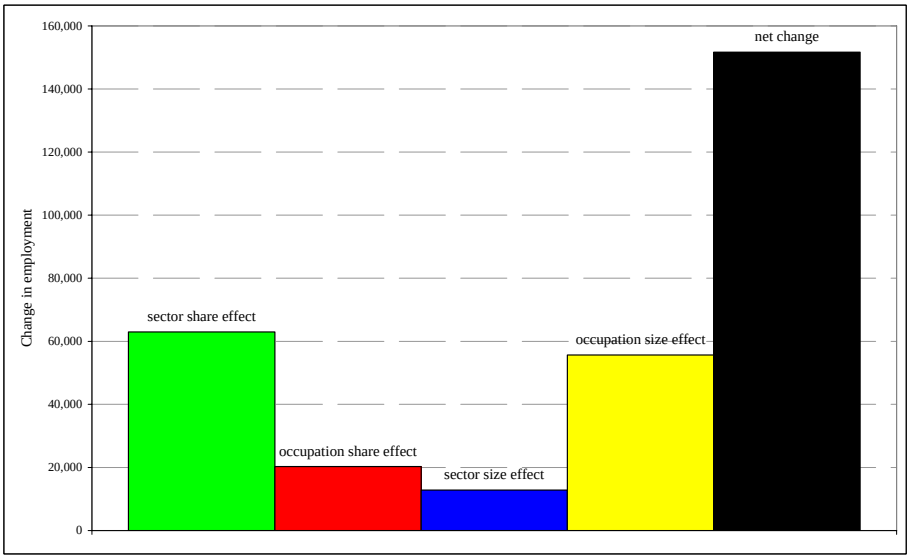
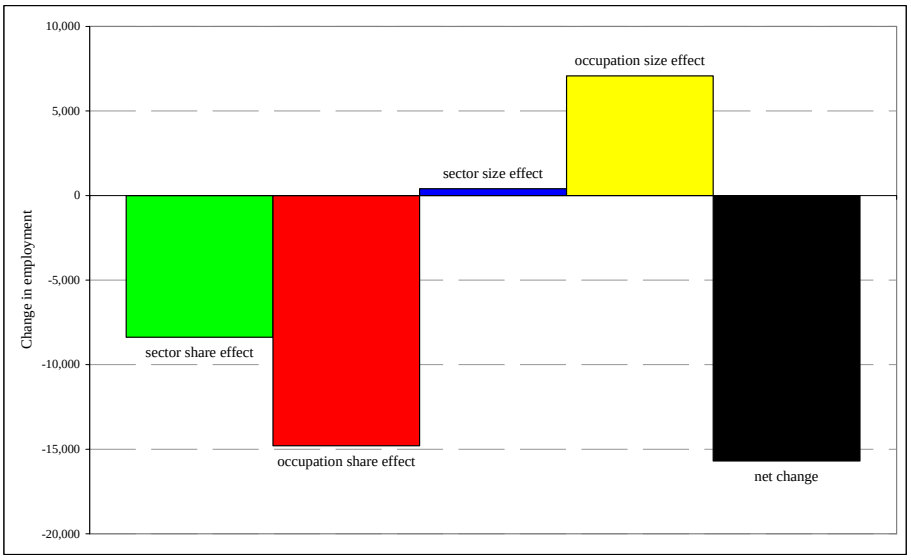


*Figure 7: Security guards in public sector, 2001-2007*




The results of the decomposition analysis are also shown in tables 12–15 below, for each of cleaners and security guards and separately for the periods 1997-1999 and 2001-2007. The four components of the change in employment in each case (the sector share, occupation share, sector size, and occupation size effects) of course sum to the total change in employment for that sector and occupation over the relevant period (which is shown in the right-hand column of each table).

*Table 12: Decomposition of changes in employment of cleaners, 1997-1999*

| | Sector share effect | Occupation share effect | Sector size effect | Occupation size effect | Total |
|---|---|---|---|---|---|
| Manufacturing | -2 703.1 | -7 287.2 | -1 196.6 | 3 408.0 | -7 779 |
| Private services | 1 780.3 | 488.7 | 11 251.9 | 12 541.0 | 26 062 |
| Public sector | -8 396.1 | -17 452.9 | 1 364.1 | 10 444.9 | -14 040 |

*Table 13: Decomposition of changes in employment of cleaners, 2001-2007*

| | Sector share effect | Occupation share effect | Sector size effect | Occupation size effect | Total |
|---|---|---|---|---|---|
| Manufacturing | -6 631.4 | -6 458.3 | 1 615.6 | 1 441.1 | -10 033 |
| Private services | 23 207.7 | 25 729.7 | 9 877.2 | 7 344.4 | 66 159 |
| Public sector | 2 771.3 | -564.8 | 1 683.5 | 5 019.1 | 8 909 |

*Table 14: Decomposition of changes in employment of security guards, 1997-1999*

| | Sector share effect | Occupation share effect | Sector size effect | Occupation size effect | Total |
|---|---|---|---|---|---|
| Manufacturing | 1 144.5 | -467.5 | -228.1 | 1 382.1 | 1 831 |
| Private services | 16 131.9 | 1 891.6 | 10 299.6 | 24 487.9 | 52 811 |
| Public sector | 3 228.2 | -1 863.9 | 331.5 | 5 410.2 | 7 106 |

*Table 15: Decomposition of changes in employment of security guards, 2001-2007*

| | Sector share effect | Occupation share effect | Sector size effect | Occupation size effect | Total |
|---|---|---|---|---|---|
| Manufacturing | -288.4 | -1 277.8 | 232.4 | 1 222.7 | -111 |
| Private services | 62 963.7 | 20 246.1 | 12 796.0 | 55 631.2 | 151 637 |
| Public sector | -8 372.8 | -14 797.1 | 399.1 | 7 072.8 | -15 698 |

### *3.6 Projections of sectoral employment without outsourcing-type shifts*

In the third part of the empirical analysis we quantify the likely magnitude of the outsourcing of employment of cleaners and security guards by sector over the period 2001-2007. With these estimates we project how different employment might have been across sectors in the absence of outsourcing-type shifts. The intuition behind the method used is to calculate a counterfactual growth rate of the share of each sector in the total employment of an occupation, based on relative sectoral growth with the relevant adjustments as set out below.

We begin by calculating the growth rate of sectoral share in total employment of time period h, excluding the occupation j being analysed (notation as defined in section 3.4):

$$\alpha_h^{jz} = \left[ \left( \frac{L_{t+h}^{z} - L_{t+h}^{jz}}{L_{t+h} - L_{t+h}^{j}} \right) \left( \frac{L_t^z - L_t^{jz}}{L_t - L_t^j} \right)^{-1} - 1 \right] 100$$

We then apply this growth rate $\alpha_h^{jz}$ to the share of that sector in the occupation in the first period, in order to project the share of the sector in the occupation in the second period:

$$\beta_{t+h}^{jz} = \frac{L_t^{jz}}{L_t^j} \left[ \frac{\alpha_h^{jz}}{100} + 1 \right]$$

We then scale this projected share $\beta_{t+h}^{jz}$ by a factor that normalises the sum of the projected sector shares of the occupation to 1:

$$\tilde{\beta}_{t+h}^{jz} = \frac{\beta_{t+h}^{jz}}{\sum_{z=1}^{m} \beta_{t+h}^{jz}}$$

These normalised projected occupational shares of each sector, $\tilde{\beta}_{t+h}^{jz}$, are then applied to the actual total number of people working in the occupation in the second period, thus allocating across sectors the number of people then employed in the occupation. The number of people working in occupation j in sector z in the second period is thus projected as:

$$\tilde{L}_{t+h}^{jz} = \tilde{\beta}_{t+h}^{jz} L_{t+h}^{j}$$

The difference between the actual and projected number of people in each sector (within the occupation) is attributed to outsourcing-type reallocation of employment across sectors. What we term here the 'outsourcing gap' for sector z and occupation j, $\gamma_h^{jz}$, is thus calculated as:

$$\gamma_h^{jz} = L_{t+h}^{jz} - \tilde{L}_{t+h}^{jz}.$$

An important feature of these projections is that the outsourcing gaps sum to zero across the sectors of the economy for any given occupation (i.e. $\sum_{z=1}^{m} \gamma_{t+h}^{jz} = 0$). One sector's loss of employment due to outsourcing-type reallocation is another sector's gain.

Of course these are not precise quantifications of actual outsourcing, as there are likely to be other factors at play in practice. In particular, given that growth is uneven across occupations within each sector, it could be argued that changes in overall sectoral employment could be driven by developments in a particular sub-sector or occupational group, with little relationship to or bearing on the employment trends in the rest of the sector.

However, there are no cogent reasons to believe that – in the absence of outsourcing-type industrial and corporate restructuring – employment of cleaners or of security guards would grow at significantly disparate rates in manufacturing or in services once adjusted to the relative overall employment growth of these sectors. It thus seems reasonably safe, given the nature of these particular occupations, to impute the 'gap' in employment measured as above to outsourcing-type restructuring. These estimates of the extent of intersectoral outsourcing

are arguably the best that are possible, in the absence of data on actual outsourcing based on company-level data.[19]

The results from this part of the empirical analysis are summarised in tables 16 and 17 below. These show the number of people projected to be employed in 2007 by sector and occupation in the absence of outsourcing-type restructuring, using the method set out above, and the gap between this projection and actual 2007 employment.

Note that the sectoral employment projections for each occupation sum to the actual number of people employed in that occupation in 2007, as employment has merely been reallocated across sectors, and of course that the outsourcing gaps sum to 0 for each occupation.

The outsourcing gaps reported here show how much lower in the case of private services and higher in the case of all other sectors it is projected that employment would have been, had there not been outsourcing-type restructuring. For both cleaners and security guards, the outsourcing gap is positive for private services (indicating that actual employment in 2007 exceeded projected employment). The outsourcing gap is negative for all other sectors, for both occupations. These findings suggest that, had there not been intersectoral outsourcing, employment of cleaners and security guards would have been lower in private services and commensurately higher in other sectors.

We also show projected annualised rates of employment growth of cleaners and security guards by sector. These are lower than the actual rate of growth for private services and higher than the actual rates for all other sectors (and in the case of total occupational employment, identical to the actual rate of growth). Whereas employment of cleaners in manufacturing actually shrank by over 4%, this analysis projects a growth rate of 2.34% (in the absence of outsourcing), and projects growth of employment of cleaners in private services of approximately the same order.

[19] Trends in value added are not be particularly helpful in analysing employment trends, given the divergent trends in productivity across and within sectors. Further, outsourcing (at least of the type analysed in this paper) would reflect more weakly in output or value added trends than in employment trends, given that the activities being outsourced are relatively labour-intensive.

The contrast between actual and projected rates of growth of occupational employment by sector is even starker in the case of security guards. Employment of security guards in manufacturing and in the public sector actually shrank (despite overall employment of security guards growing by 7.4% annually), yet in our projections employment of security guards grows at over 7% in both manufacturing and in the public sector (as well as in private services).

Adjusting sectoral employment by the 'outsourcing gap' associated with cleaners (in table 16) and security guards (in table 17), we also project what the overall growth in sectoral employment might have been in the absence of the intersectoral outsourcing of those specific occupations.[20] These projected sectoral growth rates are shown in the last column of the tables. In the case of cleaners, total manufacturing and private services employment are projected to grow at approximately the same rate. These rates are above the actual growth rate of manufacturing and below the actual growth rate of private services. Public service employment is projected to grow faster than both of these sectors (note that public service employment did in fact grow faster than did manufacturing or private services employment over this period). In the case of security guards, in the absence of intersectoral outsourcing growth in private services employment is projected to outstrip that in manufacturing (1.48% p.a. for private services as compared to 1.39% p.a. for manufacturing), but the difference between these projected growth rates is significantly smaller than it actually was.

An important determinant of these results is the fact that, excluding either cleaners or security guards (or both of course), manufacturing employment grew at a faster rate than did employment in private services, and public sector employment grew faster than both manufacturing and private services (over the period 2001-2007), as was shown in table 1.

One way in which this analysis may actually underestimate the degree of outsourcing is that the benchmark sectoral growth rates are calculated excluding only the individual occupation being analysed. On the assumption that there is a general trend of outsourcing of employment away from both manufacturing and the public sector and towards private services, our

[20] That is, projected sectoral employment is calculated (separately for each of the two occupations being analysed) as $\left[\left(L^z_{t+h} - \gamma^{jz}_h\right)\left(L^z_t\right)^{-1} - 1\right]100$.

benchmark sectoral growth rates are actually ‘inflated’ in the case of private services and ‘deflated’ in the case of manufacturing and private services, as a result of outsourcing in occupations other than the one being analysed. In other words, the sectoral growth rates used to project what sectoral employment of cleaners and security guards might have been in the absence of outsourcing, are themselves affected by the degree of outsourcing in other occupations. In this sense these quantifications of the degree of intersectoral outsourcing might be considered conservative.

*Table 16: Projections of trends in employment of cleaners, 2001-2007*

| | Employment 2001 | Employment 2007 | Employment growth (%) 2001-2007 | Projected employment 2007 | Projected growth (%) 2001-2007 | Outsourcing gap 2007 | Projected sectoral growth (%) 2001-2007 |
|---|---|---|---|---|---|---|---|
| Manufacturing | 44 777 | 34 744 | -4.14 | 51 452 | 2.34 | -16 708 | 1.52 |
| Private services | 171 040 | 237 199 | 5.60 | 196 296 | 2.32 | 40 903 | 1.51 |
| Public sector | 134 105 | 143 014 | 1.08 | 157 169 | 2.68 | -14 155 | 1.90 |
| Other | 946 324 | 978 721 | 0.56 | 988 761 | 0.73 | -10 040 | 0.11 |
| Total | 1 296 246 | 1 393 678 | 1.22 | 1 393 678 | 1.22 | 0 | 1.14 |

*Table 17: Projections of trends in employment of security guards 2001-2007*

| | Employment 2001 | Employment 2007 | Employment growth (%) 2001-2007 | Projected employment 2007 | Projected growth (%) 2001-2007 | Outsourcing gap 2007 | Projected sectoral growth (%) 2001-2007 |
|---|---|---|---|---|---|---|---|
| Manufacturing | 5 730 | 5 619 | -0.33 | 8 844 | 7.50 | -3 225 | 1.39 |
| Private services | 192 153 | 343 790 | 10.18 | 293 548 | 7.32 | 50 242 | 1.48 |
| Public sector | 40 452 | 24 754 | -7.86 | 64 630 | 8.12 | -39 876 | 2.12 |
| Other | 15 723 | 15 321 | -0.43 | 22 462 | 6.12 | -7 141 | 0.10 |
| Total | 254 058 | 389 484 | 7.38 | 389 484 | 7.38 | 0 | 1.14 |

# 4 DISCUSSION AND CONCLUSIONS

While it is generally accepted that there has been widespread outsourcing of activities such as cleaning and security guards in South Africa, there has been little sense of the extent of this outsourcing. This has led in ambiguity as to how much of the shift in employment from manufacturing to private services and of the overall growth of private services result from outsourcing, and how to what extent these are fundamental structural shifts in the economy. In the absence of actual data on the extent of outsourcing in South Africa, this paper develops a methodology for quantifying the extent of intersectoral outsourcing using national household and labour survey data.

This methodology may prove useful in the analysis of outsourcing and related shifts in the sectoral structure of employment in other countries (provided representative survey data is available over time with information on the sector and occupation in which each respondent is employed).

The analysis confirms that significant intersectoral outsourcing has taken place in South Africa over the last decade. The focus here is on the outsourcing of cleaners and security guards, away from manufacturing and from the public sector and towards private services. Employment in these two occupations has become increasingly concentrated in the ‘other business services’ subsector of services in particular, which is where companies that provide services such as cleaning and security to firms across the economy are generally classified. This trend is especially pronounced in the case of security guards, with 93.5% of all security guards employed in private services now located in the ‘other business services’ subsector within services.

The increasing concentration of the employment of cleaners and security guards in ‘other business services’ strongly suggests that that at least part of the shift in the sectoral allocation of these occupations towards private services is explained by outsourcing, rather than by a generalised growth in private services above that of manufacturing and the public sector. Further evidence of this is the fact that ‘other business services’ accounts for an increasing share of total private services employment.

The change in the employment of each of security guards and cleaners within each sector was decomposed into components associated with changes in share in sector, share in occupation, sector size, and occupation size respectively. The purpose of this analysis was to ascertain the relative importance of these factors in explaining the change in employment of the occupation in each sector. The results were strongly suggestive as to the significance of outsourcing as an explanation of trends in the sectoral employment of the two occupations.

While more rapid manufacturing growth would (in all probability) be associated with higher employment of cleaners and security guards in this sector, the overall growth rate of manufacturing employment is not particularly important in accounting for decreases in employment of cleaners and security guards in manufacturing. The sector share and occupation share effects account for the decrease in employment of security guards in manufacturing and the public sector, and of cleaners in manufacturing as well. This indicates that these falls in employment are associated with decreases in the share of security guards or cleaners in total manufacturing employment and in the public sector, and with decreases in the share of all security guards or cleaners that are located within manufacturing.

Quantifying the extent of intersectoral outsourcing in South Africa has both analytical and policy implications. It is germane to determining the extent to which the shift in employment from manufacturing to private services (as well as from the public sector to private services) constitutes a real structural shift in the South African economy. This also has implications for the sectoral dimensions of future employment trends.

Based on the projections of outsourcing calculated in this study, 58.5% of the growth in employment of cleaners in private services between 2001 and 2007 can be attributed to outsourcing of cleaners from other sectors. 28.1% of the growth in employment of security guards in private services can similarly be put down to outsourcing.

In terms of the impact of outsourcing on total employment growth of services, according to this analysis 8.3% of the net new jobs in private services between 2001 and 2007 can be attributed to the outsourcing of cleaners to private services. A further

10.2% of the net increase in private services employment can be attributed to the outsourcing of security guards towards private services. The outsourcing of these two occupations can thus together account for a quite significant portion of the total growth in services employment during this period.

When adjusted for the outsourcing of both cleaners and security guards, the projected growth rate of manufacturing employment over 2001-2007 rises to 1.55% per annum (from its actual rate of 1.36% p.a.). The projected growth of private services employment falls to 1.35% p.a. (from an actual rate of 1.63% p.a.). While the magnitude of these adjustments might appear high, it should be borne in mind that, when cleaners and security guards are excluded, manufacturing employment grew 50% more than did private services employment (between 2001 and 2007).

The projections presented in this paper should be considered indicative rather than precise, particularly given the lack of corroborating firm-level data on outsourcing processes. Nonetheless, even if these projections were to substantially overestimate the extent of intersectoral outsourcing, the analysis would still suggest that a substantial proportion of the growth in services employment – and certainly of the excess of services employment growth over manufacturing employment growth – can be attributed to outsourcing.

This implies that services employment in South Africa might not be as dynamic as previously thought. Further, intersectoral outsourcing could be expected to level off over time, as the activities which are easiest and most cost-effective to outsource are diminishing as a share of total manufacturing and public sector activities. To the extent that the growth in services employment is driven by growth in cleaning and (even more strongly) security guards, the extent to which this growth is sustainable is also questionable.

It is unlikely that cleaning employment could grow at a high rate over a sustained period, unless there is an overall rapid expansion of the economy. Even with rapid economic growth we would not expect the growth of cleaning employment to outstrip (or significantly outstrip) overall employment growth. Employment of cleaners in manufacturing fell from about 45 000 in 2001 to about 35 000 in 2007, and while

there is certainly further scope for outsourcing this scope must be diminishing. This is likely to limit the potential increases in private services employment that can be derived from the outsourcing of cleaners from manufacturing.

In the case of security guards, on the other hand, sustained rapid growth in the employment of security guards, even at a rate well above overall employment growth, is quite conceivable given that there are quite specific factors affecting the demand for security services. Any worsening of crime – or more pertinently, of perceptions of crime, feelings of insecurity, and lack of confidence in the country's police force, particularly in the context of high income inequality and social polarisation – could result in continued increases in demand for private security services and hence sustained increases in employment in this field.

To the extent that the growth in services employment – or at least the difference between the growth in services employment and the lower rate of growth of manufacturing employment – is explained by the growth of security guards and cleaners, this is germane to the nature of the growth of services and the implications thereof for South Africa's growth trajectory. Neither cleaning nor security guarding activities can be considered particularly 'progressive' from a growth perspective. These activities are labour-intensive, specifically intensive in low-skilled and unskilled labour. They are not especially technologically advanced or dynamic – either internally or in the potential for the diffusion of technological progress to the rest of the economy. The prospects of exporting such activities so as to generate foreign exchange are rather low. Productivity is not particularly high, and the scope for sustained future productivity increases is limited by the very nature of these activities.

Expansion of employment in such activities is important in absorbing unemployed people and especially the low-skilled/unskilled, which is of critical importance for South Africa. However, this type of expansion cannot be expected to drive rapid growth. Growth of services employment on the back of expansion of cleaners and security guards cannot be considered to position the services sector as an engine of growth in South Africa.

This must be borne in mind when considering the apparently rapid (or rather relatively rapid) growth in services employment in South Africa, which has led to some optimism in policy circles around the potential of this sector as an engine of growth and employment creation. The analysis presented here does not necessarily suggest that the services sector in South Africa could not develop to play such a role. However, the importance of cleaning and security guard employment in the growth of services employment, particularly when intersectoral outsourcing is factored in, suggests that a shift in the current path of services employment might be required if this sector is to play a more dynamic role.

The changing nature of the public service in recent years is also relevant to explaining the different employment patterns of manufacturing and services. The outsourcing (and various forms of privatisation) of activities previously performed by public servants (including at local government level) to the private sector would show up in the employment statistics as raising the rate of growth of private services employment, both in absolute terms and relative to manufacturing. The findings of this analysis suggest that there has indeed been significant outsourcing of cleaners and security guards from the public sector to private services. The bulk of the security guards estimated to have been shifted to private services through outsourcing-type restructuring were in fact lost to the public sector rather than to manufacturing.

Recognising the outsourcing of jobs from general government to the private services sector has important implications for interpreting relative employment trends between the manufacturing and services sectors. Firstly, the portion of the growth in private services employment that is accounted for by the shifting of general government employment to the private sector is not really indicative of any innate dynamism of the services sector relative to manufacturing. Secondly, as outsourcing from the public service flattens out, this trend is not sustainable. Much of the shift may already have taken place, and hence this aspect of the better employment performance of services relative to manufacturing is unlikely to continue at the same pace (barring major new outsourcing or privatisation, of which the latter does not appear to be on the government's policy agenda at present).

The period of this study, 1997-2007, is limited by data availability (and even this period must be analysed in two separate periods due to issues of data comparability). This period is shorter than would be preferable for this sort of analysis. It also excludes earlier years, when significant outsourcing probably occurred. It is thus likely that this analysis misses a large part of intersectoral outsourcing that did occur.

Nevertheless, it is worth noting that one of the factors to which outsourcing is commonly attributed by commentators is the new labour legislation regime introduced in the late 1990s, which accorded greater rights to workers. Anecdotal evidence suggests that one of the ways in which firms responded was by outsourcing parts of their labour force, particularly in so-called 'non-core functions' to outside firms so that adherence to labour legislation would become 'someone else's problem'. Outsourcing that took place for these reasons would be included in the period analysed here.

Such an analysis of outsourcing, which uses survey data to analyse probable trends, should ideally be complemented by firm-level analysis of outsourcing based on evidence around the numbers of people actually outsourced. The unavailability of such data for South Africa at present (at least with any significant coverage) makes the projections presented here particularly valuable in quantifying the extent of outsourcing. Should firm-level data on actual outsourcing processes become available in future, this could be combined with the methods developed in this paper to more definitively analyse the scale of outsourcing economy-wide.

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