Identifying employment-intensive export sectors in South Africa's service industry

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ABSTRACT

Unemployment within the South African economy has indicated to be a prominent issue with an official unemployment rate of 25.2% in the year 2013 (Statistics South Africa, 2013). The South African government released the National Growth Path that is primarily focused on creating stable economic growth, in order to create jobs as well as eradicate inequality. This is followed by the Industrial Policy Action Plan 2 (IPAP2) document which includes a policy package to facilitate the specific industries that are identified for job creation (DTI, 2012). Thus, employment creation has become a real concern within the South African context.

The highest percentage of total employment has remained within the services industry since 2004, at a rate above 60%. This is double the combined employment within agriculture and industry, with agriculture at 5% and industry at 25% of total employment. Thus the services industry has contributed to the highest amount of employment in South Africa. The exports of services have grown consistently since the year 2004. The largest exporter within the services industry is the travel sector, with substantial exports which peaked at 9 billion dollars in 2013. When analysing the remaining service sectors within the South African economy, it indicates that there can be a greater deal of growth in exports, with the majority of service sectors exporting less than 1 billion dollars.

Export expansion can be a basis to growth in employment creation, if policy can specifically be focused towards it. Because of the demand for methods and strategy for employment creation, this study reviewed the literature regarding the effects of export expansion, as well as research methods to identify labour intensive sectors and their spill-over effects. Studies show that the increases in exports have a predominantly positive effect on employment. Furthermore, these studies also found prominent inter-linkages of services sectors within the economy. The aim of this study was to determine the most employment-intensive services sectors and their linkages with other sectors within the South African economy, in order to make recommendations for policy makers towards sustainable economic growth and job creation in the services sector.

The Social Accounting Matrix (SAM) used in this study model generally explains through a general table of a region or nation, by listing the regional or national

economy accounting data within a square table. Thus the main goal of the SAM model was to form a comprehensive economic-wide database, which included information about all the productive activities in the economy, as well as incorporating unproductive institutions and markets, such as capital markets, factor markets, government, households and the rest of the world. The above model can thus be used to determine the link between a specific sectors expansion and the labour intensity of that sector. Furthermore, the model is not only limited to measure labour intensity, but it can also measure the specific GDP and production spill-over effects for a specific sector within the economy.

Therefore, the study could analyse the spill-over effects of specific services sectors, as well as the possible employment effect it could have throughout the South African economy. The results of the study could then also be used as a strategy for export expansion and employment creation. There is currently no policy focused strategy for the services industry, which could become beneficial.

The first step for the empirical analysis was to identify the services sectors which are tradable/ exportable. The following SAM services sectors are more tradable/ exportable than others in commercial terms, and thus they will be used in the analysis of this study:

- Building and Construction
- Trade
- Accommodation
- Communication
- Finance and Insurance
- Real Estate
- Business Services
- Community, Social and Personal Services

In the second part of the study, the objective was to determine the most employment-intensive services sectors and its linkages with other sectors within the South African economy, in order to make recommendations for policy makers towards sustainable economic growth and job creation in the services sector. The

results of this study indicated that an increase in the exports of services in South Africa has a definite impact on employment in the following sectors:

- Production
    - Accommodation, Real Estate and Building and Construction
- GDP
    - Accommodation, Real Estate and Building and Construction
- Labour
    - Community, Social and Personal Services, Accommodation, and Business Services

Keywords: Social Accounting Matrix, exports, employment creation, services, services sector, South Africa.

OPSOMMING

Werkloosheid het bewys om 'n prominente saak te wees in die Suid-Afrikaanse ekonomie met 'n amptelike werkloosheids-koers van 25,2% in 2013 (Statistiek Suid-Afrika, 2013). Die Suid-Afrikaanse regering het onlangs die Nasionale Groei Plan (NGP), wat hoofsaaklik gefokus is op die skep van stabiele ekonomiese groei, om ten einde werk te skep, sowel as om ongelykheid uit te wis. Dit word gevolg deur die IPAP2 dokument wat 'n beleid pakket insluit, met die spesifieke nywerhede wat geïdentifiseer is om werkskepping te fasiliteer (DTI, 2012). So het werkskepping 'n werklike kommer binne die Suid-Afrikaanse konteks geword.

Die hoogste persentasie van totale indiensneming het binne die dienste-industrie gebly sedert 2004, teen 'n koers bo 60%. Dit is dubbel die gekombineerde indiensneming van landbou en nywerheid, met landbou teen 5% en nywerheid teen 25% van totale indiensneming. Dus, het die dienste bygedra tot die hoogste hoeveelheid van die werkskepping in Suid-Afrika. Die uitvoer van dienste was konstant sedert die jaar 2004, waar die grootste uitvoerder in die dienste-industrie geïdentifiseer is as die reis sektor, met aansienlike uitvoere, met ’n hoogtepunt van 9 miljard dollar in 2013. Wanneer die oorblywende diens sektore geanaliseer word binne die Suid-Afrikaanse ekonomie, dui dit daarop dat groter groei in dienste uitvoere bekom kan word, met die meerderheid van die diens sektore wat minder as 1 miljard dollar uitvoer.

Uitvoer uitbreiding kan 'n basis vir groei in werkskepping wees, indien beleid spesifiek gefokus kan word tot dit. As gevolg van die vraag na metodes en strategie vir werkskepping, bied hierdie studie ’n oorsig oor die literatuur rakende die gevolge van uitvoer uitbreiding, asook navorsing metodes rakende arbeidsintensiewe sektore en hoe om sy oorloopgevolge te identifiseer. Studies toon dat die toename in uitvoere wel predominant 'n positiewe uitwerking op indiensneming het. Verder het hierdie studies ook prominent inter-skakeling binne die dienste sektore in die ekonomie gevind. Die doel van hierdie studie was om die meeste werk-intensiewe dienste sektore en sy skakeling met ander sektore in die Suid-Afrikaanse ekonomie te bepaal, om ten einde aanbevelings vir beleidmakers tot volhoubare ekonomiese groei en werkskepping in die dienste sektor te maak.

Die SAM model verduidelik deur 'n algemene tafel van 'n streek of land, met die aanbieding van die streeks-of nasionale ekonomie se rekeningkundige data binne 'n vierkantige tabel. Dus, is die hoof doel om 'n omvattende ekonomie-wye databasis, wat inligting oor al die produktiewe aktiwiteite in die ekonomie insluit, asook die integrasie van onproduktiewe instellings en markte, soos die finansiële markte, faktor markte, die regering, huishoudings en die res van die wêreld. Die bogenoemde model kan dus gebruik word om die skakel tussen 'n spesifieke sektor uitbreiding en die arbeid intensiteit van die sektor te bepaal. Verder is die model nie net beperk ten opsigte van om arbeid intensiteit te meet nie, maar dit kan ook die spesifieke Bruto Binnelandse Produk (BBP) en produksie oorloopgevolge vir 'n spesifieke sektor in die ekonomie meet.

Daarom kan die studie die oorspoel effekte van spesifieke dienste sektore analiseer, asook die indiensnemings uitwerking wat dit binne die hele Suid-Afrikaanse ekonomie kan hê. Die resultate van die studie kan dan ook gebruik word as 'n strategie vir uitvoer uitbreiding en werkskepping. Daar is tans geen beleid gefokus strategie vir die dienste industrie nie, wat voordelig kan word.

Die eerste stap vir die empiriese ontleding was om die dienste sektore wat verhandelbare/ uitvoerbaar is, te identifiseer. Die volgende SAM dienste sektore is meer verhandelbaar/ uitvoerbaar as die ander in kommersiële terme, en dus sal hulle in die ontleding van hierdie studie gebruik word:

- Bou en Konstruksie
- Handel
- Akkommodasie
- Kommunikasie
- Finansies en Versekering
- Eiendom
- Korporatiewe Dienste
- Gemeenskap, maatskaplike en persoonlike dienste

Die tweede deel van die studie was om die mees werk-intensiewe dienste sektore en sy skakeling met ander sektore in die Suid-Afrikaanse ekonomie te bepaal, om ten einde aanbevelings vir beleidmakers tot volhoubare ekonomiese groei en

werkskepping in die dienste sektor te maak. Dus, ten slotte om die vraag wat in die probleemstelling van hierdie studie was te beantwoord, 'n toename in die uitvoer van dienste in Suid-Afrika het 'n definitiewe impak op indiensneming in die volgende sektore:

- Produksie
    - Akkommodasie, Eiendom en Bou en Konstruksie
- BBP
    - Akkommodasie, Eiendom en Bou en Konstruksie
- Arbeid
    - Gemeenskap, Maatskaplike en Persoonlike dienste, Akkommodasie, en Korporatiewe Dienste

Sleutelwoorde: Sosiale Rekeninge Matriks, uitvoere, werkskepping, dienste, dienste sektor, Suid-Afrika.

ABBREVIATIONS

ANC	-	African National Congress
BRICs	-	Brazil, Russia, India, China and South Africa
DFI	-	Development Finance Institution
DTI	-	Department of Trade and Industry
EPWP	-	Expanded Public Works Programme
EU	-	European Union
FC	-	Fixed Cost
GATS	-	General Agreement on Trade in Services
GDP	-	Gross Domestic Product
HIS	-	Information Handling Services
IDC	-	Industrial Development Corporation
IO	-	Input-Output
IPAP	-	Industrial Policy Action Plan
IPAP2	-	Industrial Policy Action Plan 2
IPR	-	Intellectual Property Rights
ITA	-	International Trade Administration
ITC	-	International Trade Centre
NDP	-	National Development Plan
NEDP	-	National Exporter Development Programme
NGP	-	New Growth Path
NPC	-	National Planning Commission
OECD	-	Organisation for Economic Co-operation and Development
ROW	-	Rest of the World
SADC	-	Southern African Development Community
SAM	-	Social Accounting Matrix
SARS	-	South African Revenue Services
SQAM	-	Standards, Quality Assurance, Accreditation and Metrology
StatsSA	-	Statistics South Africa
TC	-	Total Cost

UNCTAD	-	United Nations Conference on Trade and Development
US	-	United States
VC	-	Variable Cost
WB	-	World Bank
WTO	-	World Trade Organization

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Chapter 1: Introduction

1.1 Introduction

The South African economy has struggled to create the necessary job opportunities for its people with an official unemployment rate of 25.2% in 2013 (Statistics South Africa, 2013). In real concern for the economic state South Africa is finding itself in, the government released the National Growth Path (NGP) document. It is primarily focused on creating stable economic growth, in order to create jobs as well as eradicate inequality. This is followed by the IPAP2 document which includes a policy package to facilitate processes within the specific industries that are identified for job creation (DTI, 2012).

The NGP specifically identified core challenges for mass joblessness, poverty and inequality in the South African economy. Despite the economic volatility since 1994 to 2008, South Africa experienced a 4% economic expansion, more or less the same than other upper-middle income countries (Department of Trade and Industry (DTI), 2012). After 2008 the economy was also associated with high inequality and high levels of joblessness. The position was the worst for young people, where not enough jobs were created to absorb the new entrants into the labour market. In the first quarter of 2010 the unemployment rate was 40% for people of the ages between 16 and 30 years, and 16% for those of the ages between 30 and 65 (DTI, 2012). Since the lowest point of employment in the third quarter of 2010, the economy has created 646 000 jobs up until 2013, but the official unemployment rate as released by Statistics South Africa (STATSSA) in the first quarter of 2013 was 25.2% (Statistics South Africa, 2013).

The South African Government published the National Development Plan (NDP) in 2011, which discusses the specific actions that will be taken to ensure sustainable employment. One of the main strategies of the NDP is promoting exports and competitiveness, which requires more active promotion of demand for South African products in the domestic and foreign markets. Policy will thus focus on developing areas which indicate competitive advantage. This should result in the share of exports in South Africa to rise, with the growing portion of exports in non-mineral manufacturing and services (National Planning Commission, 2011).

The government's focus is directed specifically in the tourism and other services industries, to ensure that strengthening measures promote the targeted marketing campaigns, manage costs, quality assurance and logistics, improve training and identify employment and entrepreneurial opportunities. This will also include measures to improve business in terms of services such as finance and communication, and enhancing support measures to encourage diversification (DTI, 2012).

The economic importance of services in the South African economy has grown considerably. Not only has it become a major generator of employment but is playing an increasing role in trade in two specific ways. Firstly, it plays an important role as an input to manufacturing and can critically influence the competitiveness of this sector. Secondly, parts of the services industry are highly tradable and South Africa is increasingly becoming a significantly more important exporter of services (DTI, 2012).

The following section aims to provide a brief overview of the global trade in services as well as South African unemployment rates and the government's plans for economic growth. Section 1.2 will include further explanation of the problem statement, followed by the research questions and objectives in Sections 1.3 and 1.4., then followed by the research methodology in Section 1.5. Finally, the chapter outline will be set out for the remainder of the thesis in Section 1.6.

1.2 Background

This section will provide an overview of the role that services has in the world economy and the labour intensity of the service industry. This is followed by a brief overview of the South African perspective on the services industry in its local economy.

Globalisation is one of the most frequently used terms in the discussions of development, trade, and international political economy. Globalisation is defined as "the increasing integration of national economies into expanding international markets" (Todaro & Smith, 2011:564). Public policy makers consider export expansion as part of the globalisation process and an economic tool to create jobs

and, build up overseas exchange reserves in order to ultimately create a higher standard of living (Evangelia, et al., 2005).

International trade often played a determining role in the historical growth of the developing world, thus foreign trade can entail specific benefits. Some advantages can include decreasing a nation's current account deficit, as well as, an increase in the surplus of foreign exchange and the ultimate influence on the balance of payments (Todaro & Smith, 2011).

One of the factors that determine if a firm wants to export is the opportunity to grow when the domestic demand is saturated. Thus the opportunity to expand and grow is reliant on exporting (Evangelia, et al., 2005). In a study by Frederick and Barney's (2007), one of the main reasons for the growth in the services industry is increased levels of services exports. Thus services exports allow for an expansion of demand, not limited to the domestic economy, but broadened into foreign economies.

Services currently represent more than two thirds of world gross domestic product (GDP) (World Trade Organization, 2012). The share of services value-added in GDP tends to rise significantly with the countries level of income, standing at 73% on average in high income countries (77% in the United States), compared with 54% and 47% respectively in middle- and low-income countries (World Trade Organization, 2012). Even in the latter group, the production of services is generally a core economic activity, whose contribution to GDP is above that of both manufacturing and agriculture. Significant differences however exist between countries within the same income group, as for example for India and Nigeria, two middle-income countries whose respective shares of services in GDP are 54% and 27%, or Kenya and Liberia, two low-income countries whose shares are 54% and 22% respectively (World Trade Organization, 2012). Thus, developing countries share of production is towards services, where developing countries have a smaller share.

1.2.1 Types and classifications of services

Services include a wide range of intangible as well as heterogeneous economic activities, which is difficult to define. A service can be defined as a deed, a process

or performance, or more specifically a service can be defined as an act that one party can offer another, which is essentially intangible and does not result in the ownership of anything. Its delivery or production is not connected with a physical product (Boshoff & Du Plessis, 2009). The General Agreement on Trade in Services (GATS), defines the trade in services as the supply of services through cross-border trade, consumption abroad, commercial presence and the presence of natural persons as a mode of supply (Chang, et al., 1998).

The GATS Agreement defines the trade in services through four specific modes of supply indicated as follows (World Trade Organization, 2010):

Mode 1 defines trade in services through cross-border trade, which is comparable to international trade in goods, where a product (or in this case the service) crosses a national frontier. This, for example, includes acquiring a loan or taking out insurance cover domestically from a financial institution located abroad. **Mode 2** is when the service is consumed abroad, which includes the movement of consumers into the territory of the suppliers. This, for example, will include financial services being purchased by consumers while traveling abroad. **Mode 3** entails the commercial presence of a supplier of one country in the jurisdiction of another country, for example, a foreign bank that establishes another branch or subsidiary in a country abroad which provides financial services in that country. Thus the Agreement includes foreign direct investment, including trade through commercial presence. **Mode 4** includes the supply of services through the presence of natural persons of one country in the jurisdiction of another country. This is for example the presence of independent financial consultants as well as the intra-corporate transfer of managers, thus relating to independent service suppliers and the employees of juridical persons supplying services. Table 1.1 provides a summary of the above discussed modes of service supply.

Table 1.1 Modes of Supply (Summary)

Mode	***Supplier Presence***	***Criteria***
1. Cross-border supply	Not present in the territory of the other country	1. Service delivery is within the territory of the other country
2. Consumption abroad	Not present in the territory of the other country	2. Service delivery is outside the territory of the other country, consumed in the domestic country by the foreign consumer
3. Commercial presence	Present in the territory of the other country	3. Service delivery is within the territory of the other country, through the commercial presence of the supplier
4. Presence of natural person	Present in the territory of the other country	4. Service delivery is within the territory of the other country, with the supplier present as a natural person

(World Trade Organization, 2010)

The defining of different services can be perceived as a difficult task. Therefore, for the purposes of this study, services have been classified as per their characteristics. They have been classified as hard and soft services, consumer and producer services, and the official classification by the WTO. These are discussed below.

1.2.1.1 Hard and soft services

Hard services are the services that require limited or no local presence by the producers, where production is separate from consumption. The service can also be used any time after production (for example, education, life insurance, music and architectural design). In contrast to this, soft services are the services that require the presence of the producer, where consumption and production occur simultaneously, such as health care, laundry and hotel services (Erramilli, 1990).

1.2.1.2 Consumer and producer services

Producer services can be defined as, support services provided for other goods and services. For example, personal services, entertainment services, cleaning, financial, cleaning, computing and other business services. Thus, a producer service is a support service to producers throughout the production process. A consumer service can then be described as the service sold to the final consumer directly for their personal use, for example personal services such as hairdressing and beauty treatments, and entertainment services (Mclachlan, et al., 2002).

1.2.1.3 World Trade Organization's classification of services

In July 1991, the World Trade Organization released a document indicating the main classifications for services by sectors. They classified the main services as; business services; communication services; construction and related engineering services; distribution services; educational services; environmental services; financial services; health related and social services; tourism and travel related services; recreational; cultural and sporting services; transport services; and other services not included above (World Trade Organization, 2010).

In 2013, the World Trade Organization (WTO) published a report on the international trade of commercial services. This report defines the trade of services which includes the import and export of services as commercial services. As defined by the WTO commercial services include transportation services, travel and other

commercial services, excluding government services. The above is described by the World Trade Organization (2013) in more detail as follows:

Transportation services: “covers sea, air and other including land, internal waterway, space and pipeline transport services that are performed by residents of one economy for those of another, and that involve the carriage of passengers, the movement of goods (freight), rentals (charters) of carriers with crew, and related supporting and auxiliary services.”

Travel: “includes goods and services acquired by personal travellers, for health, education or other purposes, and by business travellers. Unlike other services, travel is not a specific type of service, but an assortment of goods and services consumed by travellers. The most common goods and services covered are lodging, food and beverages, entertainment and transportation (within the economy visited), gifts and souvenirs.”

Other commercial services are defined by the following components:

Communication Services: “includes telecommunications, postal and courier services. Telecommunications services encompasses the transmission of sound, images or other information by telephone, telex, telegram, radio and television cable and broadcasting, satellite, electronic mail, facsimile services etc., including business network services, teleconferencing and support services. It does not include the value of the information transported. Also included are cellular telephone services, Internet backbone services and on-line access services, including provision of access to the Internet.”

Construction: “covers work performed on construction projects and installation by employees of an enterprise in locations outside the territory of the enterprise.”

Insurance services: “covers the provision of various types of insurance to non-residents by resident insurance enterprises, and vice versa, for example, freight insurance, direct insurance (e.g. life) and reinsurance.”

Financial services: “covers financial intermediation and auxiliary services provided by banks, stock exchanges, factoring enterprises, credit card enterprises, and other enterprises.”

Computer and information services: “is subdivided into computer services (hardware and software related services and data processing services), news agency services (provision of news, photographs, and feature articles to the media), and other information provision services (database services and web search portals).”

Royalties and licence fees: “covering payments and receipts for the use of intangible non-financial assets and proprietary rights, such as patents, copyrights, trademarks, industrial processes, and franchises.”

Other business services: “comprising trade-related services, operational leasing (rentals), and miscellaneous business, professional and technical services such as legal, accounting, management consulting, public relations services, advertising, market research and public opinion polling, research and development services, architectural, engineering, and other technical services, agricultural, mining and on-site processing.”

C: “is subdivided into two categories, (i) audio-visual services and (ii) other cultural and recreational services. The first component includes services and fees related to the production of motion pictures, radio and television programmes, and musical recordings. Other personal, cultural, and recreational services include services such as those associated with museums, libraries, archives, and other cultural, sporting, and recreational activities.” (World Trade Organization, 2014:157-159)

1.2.2 Labour intensity of the services industry

In developed countries, the services industry influences approximately 70% of jobs directly or indirectly. Furthermore, in the developed world roughly 90% of new jobs created after 2000 are concentrated primarily towards services (Frederick & Barney, 2007).

The services industry tends to be relatively labour intensive, referring to the fact that services use relatively more labour per unit of output. Accordingly, the costs of wages and salaries services range from 70% to 90% of the total output, in comparison with the manufacturing sector ranging from 5% to 40%, depending on the degree of labour and capital intensity of each firm (Michael & Stephen, 2011).

The amount of output produced by either a country or firm, depends both on productivity and the amount of input (capital and labour) used in the production process, as illustrated by the production function (Andrew et al., 2008). Referring to the production function relative to change in labour, to insure an increase in output, a relative increase has to occur in the amount of labour or labour productivity. With regards to this, the link is theoretically made that, if an increase has to be made in output in a labour intensive sector, ultimately the sector has to increase its amount of labour (Andrew, et al., 2008).

Using the assumption that the firm is functioning in a competitive labour market, where the firm has a perfectly elastic supply of labour and can hire as many workers as needed at a specific wage rate, the firm's demand for labour is determined by the marginal revenue product of labour (Robert & Daniel, 2005). In order for the firm to maximize profits, they will hire workers where the supply of labour is equal to demand for labour (Robert & Daniel, 2005).

1.2.3 Services in the South African economy

The services industry contributes 68.3% to GDP, 63% to employment and 74% to labour formation in South Africa and has been the main source of growth for the economy since the 1990s. The prominent influence of services is more pronounced in the informal sector where petty trade, domestic work and minibus taxi driving are the most common sources of income (DTI, 2010). Currently, the services industry makes up 68.3% of the South African GDP, with the secondary industry consisting of 19.4% and the primary sector of 12.3% of South African GDP in 2013 (Statistics South Africa, 2013). The outlook for South African exports has been looking negative; competitiveness remains constrained as the global demand remains below trend and the rand remains volatile. Contributing factors for export constraints include infrastructural impediments and slow global demand (IHS Global Inc., 2014). Since 2010 the portion for export as contribution to GDP gradually started to increase to a maximum of 31.14% in 2013. The exports of services have grown consistently since 2004, where a minor decline occurred between 2008 and 2009. After 2009, services exports started increasing again, with low volatility and a minor decrease in 2013 (IHS Global Inc., 2014).

Increasing the rate of job creation remains a problem in the South African economy, and policy makers have struggled to change this over time. It has been a great task to combine the best policies in order to create jobs as well as sustainable economic growth (DTI, 2012). Public policy makers regard export development as an economic tool that enables a nation to employ citizens, build overseas exchange reserves and ultimately create a higher standard of living (Shankarmahesh, Olsen and Honeycutt, 2005:203; Edwards and Stern, 2007:1-22).

Expanding exports on its own is not enough, without identifying the essential industries that support growth as well as the policies implemented for it, it remains unsuccessful. The services industry currently represents two thirds of the world share in GDP and is associated with high income countries, identifiable with higher levels of prosperity and employment (World Trade Organization, 2012). In the IPAP2 document the DTI policy and strategy for services is predominantly focused towards tourism and business process services (DTI, 2012). This excludes services such as construction, trade, accommodation, transport, communication services, finance and insurance, as well personal and other services which contribute greatly to employment within the economy, and some of these other services sectors may even have a greater potential for both exports as well as employment creation.

The identification of those specific service sectors which are highly labour absorbent has not been thoroughly researched in South Africa, and more importantly which services sectors have the highest labour intensity when exports increases has also not been researched.

Thus, this study aims to determine the most labour absorbent services export sectors in South Africa, as well as the spill-over effects from one services sector to the other sectors in the economy in terms of employment creation. This will also contribute to the constant effort of policy makers to create sustainable economic growth and job creation in South Africa. The aim is thus to indicate not only which services sectors are currently the most labour-intensive, but also to investigate if the exports in certain services sectors were to be increased, what impact that would have on employment in those sectors as well as the sectors to which they spill over. This will assist policy makers to focus development to those services sectors that have the highest potential in terms of employment as.

1.3 Problem statement

The aim of this study will be to determine the most employment-intensive services sectors, especially when exports are increased in these sectors, and their linkages with other sectors within the South African economy. The results can be used to make recommendations for policy makers towards sustainable economic growth and job creation in the services sector.

1.4 Research questions

What is the impact of the services sector on employment and growth in the South African economy?

The following research questions arise when formulating the problem statement:

- Which services sectors have the largest labour intensity in South Africa?
- With which sectors do these services sector have the most prominent linkages / spill-over effects?
- What impact will an increase in the exports of the various services sectors have on the employment these sectors?

1.5 Research objectives

The objective of this study will be to determine the most employment-intensive service sectors and their linkages within the South African economy, in order to determine recommendations for policy makers towards sustainable economic growth and job creation. This together with the identification of linkages in other sectors can support more focused policy making. The following objectives were identified when formulating the problem statement:

- Determine which services sectors have the largest labour intensity in South Africa.
- Determine with which sectors these services sectors have the most prominent linkages / spill-over effects.
- Identify what impact an increase in the exports of the various services sectors will have on the employment in each services sector.

- Identify what services sectors have the highest labour intensity as well as export potential in South Africa.

1.6 Research method

In order for the study to be successful a thorough literature review and empirical study has to be conducted. The results of the above mentioned will help to provide the necessary guidelines to determine which service sectors are the most employment-intensive and their linkages within the South Africa economy.

1.6.1 Literature review

The literature review will address specific theoretical issues that form the basis of the study. Firstly, relevant studies will be reviewed, in order to examine various methodologies for identifying employment-intensive sectors. This will include studies on export expansion as a method for job creation, as well as, studies including methods for identifying employment-intensive sectors.

Secondly, the influences the services industry and its export sector have on the economy will be explored, in terms of South Africa and the World. This section will include reports and literature on the services industry and its influence in the world economy.

1.6.2 Empirical study

The empirical study will aim to identify which service sectors in South Africa are the most employment-intensive using the Social Accounting Matrix (SAM) model. This will provide a means to determine not only the most employment-intensive sectors, but also the linkages within other sectors. The definition for the Social Accounting Matrix is, "a summary table, which refers to a given period, representing the production process, income distribution and redistribution which occurs between sectors, factors of production, actors in an economic system and the "Rest of the World" (ROW), meaning, all actors outside the economic system being studied" (Statistics South Africa, 2005).

The empirical analysis will include a GDP, Productivity and Labour Multiplier analysis for all twelve service sectors included within the SAM model. Each of the above multipliers is divided into direct, indirect and induced multiplier effects.

1.7 Chapter division

The chapters in this study are presented as follows:

Chapter 2: Literature Review on Export Expansion and Employment Creation in the Services Industry

The aim of this chapter will be to provide the necessary background on trade theory in terms of services. The development of international trade theories will be discussed. Thereafter, theory in terms of job creation, as well as the relevant link of exports on a macro- and micro-level will be discussed.

Chapter 3: South African services industry

This chapter will address the on-going problem of unemployment in South Africa, and the government's plans to create jobs through economic policy and export expansion. The services industry will then be discussed within the World and South African context. Thereafter, the services industries' contribution to employment and GDP will be discussed. Finally, the GATS and IPAP documents will be discussed in more detail.

Chapter 4: Methodology of the empirical analysis

The methodology will provide an overview of the Social Accounting Matrix (SAM) multiplier model and more specific explanations regarding the employment aspect of the model. A discussion of the SAM multiplier decompositions will also be included. Furthermore, the data used for the analysis will be described. Finally, the process used in the empirical analysis, as well as the steps taken to process and analyse the data will be discussed.

Chapter 5: Empirical analysis and results.

The empirical study will aim to identify which services sectors in South Africa are the most employment-intensive using the Social Accounting Matrix (SAM) model. This will enable us to not only determine the most labour intensive sectors, but also the linkages within other sectors. The empirical analysis will include a GDP, Productivity and Labour Multiplier analysis for all twelve service sectors included within the SAM

model. Each of the above multipliers is divided into direct, indirect and induced multiplier effects.

Chapter 6: Conclusion and Recommendations.

This chapter will conclude and summarise the results of the empirical study and its literature. The limitations of the study will also be addressed, followed by recommendations for application of the study's results and possible future studies.

This chapter will also provide brief summaries of all the chapters included within the study.

Chapter 2: Literature Review on Export Expansion and Employment Creation in the Services Industry

2.1 Introduction

Globalisation has changed the structure of the world economy; where companies and individuals were previously not affected by economic events or activities, they now share these prospects (Stutz & Warf, 2007). This change is forcing companies not only to adapt to higher competition and economic change, but scope of business, which is not only limited to the domestic economy, but expanded into the modern global economy. Thus firms and sectors within domestic economies must become more efficient in trade and production, in order to compete with the highly efficient markets globally. The nations not competing in these highly effective markets are left behind in terms of development and prosperity, and they are excluded from the highly advantageous effects as well as the negative effects associated with a global economy.

The trade in goods globally has not yet returned to the rapid pre-economic crisis growth rates. After a sharp fall between 2008 and 2009, the growth in goods traded was only 5.3% in 2010 and 1.7% in 2011 (UNCTAD, 2013). Regarding the services industry, growth also remained moderate at 1% and 2%, but specifically international tourism grew by 4% in 2012, which also represents 30% of world exports in services. Other services such as international transport, which is the second largest category within commercial services grew by 4.3% in 2012 (UNCTAD, 2013). The strong growth in services exports could be partly attributed to the constant effort from the WTO to create more liberalised international trade.

The objective of this chapter is to provide the needed background on trade theory and studies focussed towards employment creation. Section 2.2 will address why countries trade, where after the relationship between export expansion and employment creation will be discussed in Section 2.3. The forward and backward linkages within specific sectors will be discussed in Section 2.4. Thereafter, Section 2.5 will provide a conclusion for the chapter which includes a short summary.

2.2 Why countries trade: Trade theory

This section will provide the relevant background on trade theory and its context for the services industry. The trade in goods and services has been one of the central parts of capitalism and a major factor in the linking of various parts of the world. Whether a country can export goods successfully is not only dependant on its resources, but also the economic conditions, the available opportunities, the effort of the producers to trade internationally and finally the ability of producers to compete abroad. These production factors (resources) include labour, capital, entrepreneurship, technology and land containing raw materials (Stutz & Warf, 2007). Some countries have the population (labour) to support large industrial complexes, while others do not. Other countries are home to a large pool of workers (labour) with the ability to run modern machinery, while some have scientists and engineers specialising in research-laden products. Other countries have the specific skill of entrepreneurs who are more capable and knowledgeable than others (Francois & Hoekman, 2010).

Most of the international trade is directly linked to a country's specific lack of natural or human resources, which creates the trade in the specific lacked production factors. This is either the trade in products or services, depending on the lack, or the specialisation of the specific country. Thus, if country A is abundant in labour inputs it will import capital inputs from country B, and export or trade in labour inputs. The following section will provide background on specific trade theories linked to international trade and trade in services.

2.2.1 Neo-classical Trade Theory

The forces of international trade can be thoroughly understood by the proper understanding of the foundations of *neoclassical economics*. The foundations of neoclassical economics were built by the two Swedish economists Eli Hecksher and his pupil Bertil Ohlin. There were four results in neoclassical trade theory namely; factor price equalization, Stolper-Samuels proposition, Rybczynski proposition, and Heckscher-Ohlin proposition. This section will give specific attention to the Heckscher-Ohlin proposition, where the results argue that a country will export the specific goods which intensively use the abundant factor of production (Van Marrewijk, 2007).

The *Heckscher-Ohlin proposition* postulates in a neoclassical framework, with two final goods, two factors of production, and two countries with identical homothetic tastes, a country will export the specific goods which intensively use the abundant factor of production, which is either capital or labour. For example, if a country is more capital abundant, it will export capital intensive goods; if the country is more labour abundant it will export productions of labour intensive goods. Thus the neoclassical theory is based directly on the supply structure of the economy, with little attention given to the demand structure of the economy (Stutz & Warf, 2007). The Heckscher-Ohlin theory argues that as the trade patterns develop, wage rates will tend to equalize. Thus if a country specialises in labour intensive goods, the abundance it has in labour diminishes and the marginal productivity of labour rises, and wages will increase. In contrast with this, when a country specialises in capital intensive production of goods, labour becomes less scarce, the marginal productivity of labour falls, and wages will also fall (Stutz & Warf, 2007).

The *factor endowment* theory states that countries will specialize in production of the commodities, which makes use of their abundant factors of production (labour, capital, land etc.). The factor endowment theory can be summarized on two crucial propositions:

Firstly, products need specific productive factors in different relative proportions. For example producing agricultural goods, requires relatively more labour per capital than manufactured goods which requires more capital per worker than most primary goods. Thus the factor endowment theory assumes that some products are more capital intensive than others produced in the economy. Secondly, countries have different factors of endowment, for example a developed country like the United States has large amounts of capital per unit of labour, and is thus defined as a capital-abundant country. Other countries like Egypt, India and Colombia, have less capital and more units of labour, defining them as labour-abundant countries. Thus, in general, developed countries are more capital-abundant and developing countries are more labour-abundant in their individual economies (Todaro & Smith, 2011).

Traditional international trade theory can be an important stimulator of economic growth. This also enlarges a country's consumption capacities, increases world output, and provides access to scarce resources and worldwide markets for products

where poor countries would be unable to grow. Furthermore international trade tends to create domestic equality through the equalization of factor prices, raising the income of real incomes of trading countries, thus making efficient use of each country's resource endowments (Todaro & Smith, 2011). International trade also helps countries achieve development; specifically in the sectors of the economy where these countries have a comparative advantage, this ultimately can help create more effective economies of scale (Francois, 1990).

2.2.2 Comparative Advantage Theory

According to comparative advantage theory the demand side of economic structure diversified preference comes into play, which includes physical and financial endowment creates demand for profitable trade. It is nearly impossible for an individual or a country to be completely self-sustaining in its demand of the simplest lifestyle (Todaro & Smith, 2011). Thus it would be more profitable to engage in the specific activities to which they are most suited or have a *comparative advantage* in terms of their natural abilities (skills) or resource endowment (Todaro & Smith, 2011). This creates the ability to trade in the specific product or service that the individual or country is the most effective in producing. Thus specialization is created based on when comparative advantage arises, even in the most primitive economies (Todaro & Smith, 2011). When countries specialize in production and export of specific goods and services, they have a comparative advantage over other countries. This theory was introduced by economist David Ricardo (Stutz & Warf, 2007). He also assumed labour theory (value of goods reflect the necessary labour that goes into the production) of value and thus ignored demand. In his theory David Ricardo concluded that, nations will specialize in the production of the commodity that uses the least amount of labour in comparison with other nations (Stutz & Warf, 2007). In order to develop competitive advantage, skilled labour, good education and adequate technical training is needed. This should then lead to more constructive innovation and specialization in order to create higher competitiveness in the global economy.

Comparative advantage trade theory has long dominated international trade theory. The theory for comparative advantage also indicates that labour and capital share different gains from the influence of international trade (Thomas, 2008). Typically in

international trade, two main gains can be identified; firstly it enlarges the world production possibility set and secondly, the gains are enlarged when inputs are traded (Shiozawa, 2007). The theory for comparative advantage played a predominant role in the policy case for globalisation and free trade. In contrast to this, while accepted by most economists, some economists would question the theoretical assumptions of comparative advantage regarding full employment and the ability of markets to initiate the global allocation of production on the basis of country relative efficiency (Palley, 2003). Comparative advantage is the production of a commodity at a lower opportunity cost than any of the alternative commodities produced in the country. Then any surplus produce of this specific commodity can be exported, because it is more suitable to produce than the other commodities. The theoretical critiques for the comparative advantage theory are increasingly joined at a political level. Thus more members of the public and politicians are questioning the actual benefits of globalisation and international trade. This also creates scepticism around the actual benefits and future development created by international trade and globalisation.

2.2.3 The New Trade Theory

The new trade theory developed from the work of Helpman and Krugman first in 1979 and then later in 1985, where they assumed that international trade between countries with similar factor proportions occurs mainly in differentiated varieties with the basis of increasing returns to scale (Van Marrewijk, 2007). These specific principles do not fit into the Heckschner-Ohlin neoclassical trade theory which discusses the development of inter-industry trade between countries as the result of their relative factor endowments (Konchyn, 2008). The new trade theory mainly focusses on the problems of international industrial specialization of advanced countries, convergence of their demand and industrial structures, as well as the development of international trade among developed countries, which has focus on intra-industry trade.

Gomory and Baumol (2000) raised concerns regarding international trade, which were developed further by Samuelson (2004). Their studies developed theory regarding the actual benefits or gains distribution in international trade and global production. Their findings addressed new avenues for the effects of trade and

revealed the potential convergence between institutional trade theory and neo-classical trade theory. The convergence of this operates at multiple levels:

Firstly, they found that the expansion of trade into a global market may not have the traditionally expected benefits, but on the contrary can create countries that benefit and other countries that may not. Secondly, they further argue the emphasis of spill-over of production methods between countries and the transfer of technology. Thirdly, they linked the increasing returns to scale to Post Keynesian economics, which emphasises the effects of increasing returns to scale in international trade. However, Gomory and Baumol (2000) linked the level of productivity to market size, which states that an increase in market size will have the effect of higher productivity. Fourthly, they argue for strategic trade policy in order to create greater returns from international trade. Finally, they analysed microeconomic theory, which is the basis of conventional trade theory. Thus, their analysis is done on conventional trade theory's terms and strengthens the results on the effects of trade deficits on investment and employment (Thomas, 2008). The new issue which was raised by Gomory and Baumol, is the evaluation of comparative advantage and the impact of the distribution of gains from trade. The distributions of these benefits are determined by demand and supply conditions, and these conditions change over time. One of the critical factors is global demand patterns. A country will benefit more from trade if international demand for its products is relatively stronger, thus the price will be driven upwards for the country's exports. This will create higher profits in the exported market.

2.2.4 Gravity Model

The gravity model is based on Newton's theory on gravitation which states that any two objects in space attract one another according to a force that is proportional to the product of their masses and the distance separating the objects (Stutz & Warf, 2007). Thus the gravity model states that "the force of attraction between two objects is decided by the distance between two objects" (Lei, 2011). This can be indicated through the following formula:

$$T_{ij} = AY_iY_j / D_{ij}$$

In the above formula A is constant, i and j are individually a country, T_{ij} would be the bilateral trade between country i and country j, Y is the economic size and finally D_{ij} would be the distance between country i and country j. The section that follows will discuss theory regarding employment creation with specific focus towards the services industry.

The gravity model has been frequently used for the analysis of bilateral trade flows between different countries. The formula normally takes into account the value of trade flow between the countries, nominal GDP, size of the population, physical distance, and any other factors influencing trade cost between the countries. The GDP measures the production capacity for the exporting country and the absorption capacity for the importing country. Physical distance is used as a proxy for transport costs, where the population is used as indication of country size. Thus, the gravity model is used to provide the estimated preference for trade between the specified countries within the model, the two opposite forces determine the volume of bilateral trade between countries (Lei, 2011).

2.3 The relationship between export expansion and employment creation

The previous section provided the needed theoretical background for trade and its perceived effects on an economy. This section will provide background regarding export expansion and employment theory, and more specifically on the effects that export has on the domestic economy on employment. This will be followed by a discussion of the theory regarding the creation of growth in employment, with more focus towards the services industry.

2.3.1 Macro-level impact of increased exports on employment

The new trade theory created the discussion on dynamic and static advantages, which a country can achieve through imperfect competition, which is gained under free trade (Krugman, 1979). In traditional neo-classical trade theory, the gains from international trade are the source of economic growth, which is maximized through adjustment. This is achieved through the means of economic liberalisation of the uneven factor and resource reallocation, maintained through import substitution and export expansion. In the process of intensifying economic liberalisation and intensifying functional market competition, the production factors start moving from

the inefficient industries toward the more efficient industries. This thus develops the economic system and international trade optimally, in order to create economies of scale.

Based on the *neoclassical free-trade model*, specific theoretical answers are given in terms of influence of trade in goods or services on development. In this model, trade is seen as an essential stimulator of economic growth (Todaro & Smith, 2011). It also enlarges a country's consumption capacity, increases world output, and provides access to specific resources and products that poor countries would never have access to (Todaro & Smith, 2011). These advantages provides countries with the ability to achieve development by promoting and rewarding the sectors which the country has a comparative advantage in, whether it is in terms of labour efficiency or factor endowment (Van Marrewijk, 2007). Furthermore, it also results in advantages in terms of economies of scale, which is maximum output reached by minimal input for the specific production factors.

The benefits of exports can be summarised as "gains from trade", which includes higher competitiveness, knowledge transfer and allocative efficiency (Harcourt, 2000). Firstly, as firms have to compete with global firms, they have to be more innovative, use better business practices and use technology more efficiently in order to be competitive within a global economy. Secondly, when firms enter into export they are exposed to international technology trends, international product design and international consumer behaviour, which contributes to knowledge transfers. This develops the competitive performance of the firms entering into exports. Finally, evidence indicates that long-term international business survival enjoys faster sales and faster employment growth than the firms not entering into long-term international business (Montgomery & Tuladhar, 2013).

Multiple studies have tried to determine the specific linkages between exports and employment growth, such as the study done by Kiyota (2011), which analyses employment created by the expansion of Japanese goods and services exports. The above was measured through an empirical analysis of 1975-2006 Japanese input-output tables. Kiyota found that employment from exports were 9.9% of total employment. The contribution from exports increased from 6.4% in 1990 to 9.9% in 2006 (Kiyota, 2011). Leclair (2002), conducted a study to determine the effect that

export competition had on manufacturing employment during the United States 1991 recession. The study found that $66 000 expansion in exports created approximately one new job, but this was all dependant on the labour-intensity of the product exported. Finally, the study concluded that export composition has reduced and strengthened employment at times. Consequently if job creation is within national goals the specific labour-intensive export sectors should be promoted (Leclair, 2002).

The department of Statistics Netherlands formulated a historical Social Accounting Matrix model for Netherlands for the year 1938. The model was developed to focus on specific aspects of the economy like; the labour force, inter-industry relations, balance of payments, household consumption and unemployment (Den Bakker, et al., 1994). This process comprised of decomposing private final consumption expenditure by the type of services and goods by each category of household. They found that on average, 31.8% of the consumption budget was for food, 5.5% was used for tobacco and beverages, 16.5% for durable goods and dwelling services, 1% to consumption abroad and 28.8% for other goods and services. Finally, they analysed employment through various non-monetary data. For this specific analysis two distinct categories of labour were used: breadwinners (defined as a married man or an unmarried person) and non-breadwinners (all other persons not falling into the former category). Through the employment analysis, they concluded that, the share of breadwinners in employment ranged from 39% in apparel manufacturing and 74% in transport, communication and storage. The actual values are not relevant to this study, but the measurement used indicates inter linkage within the economy. Thus the SAM model is relevant for indicating the effect that specific economic activities have on employment in its sub-categories.

Jones (2010) used a Social Accounting Matrix to apply a multiplier analysis in order to measure the backward linkages between tourism and the domestic economy of Mozambique. Jones first constructed a standard SAM model. After developing the standard model, the analytical input-output tables were applied. In the multiplier analysis it was assumed that prices are fixed and preferences and technology are also fixed. The employment multipliers used measured the expected job creation in terms of tourism growth. The study found that employment creation in the tourism industry is similar to the other services industries and, that job creation was higher in

the tourism sector than the manufacturing industry, thus motivating empirically the inter-linkages between job creation and the services industry.

Freier and Steiner (2010) structured a multi-factor labour demand model which distinguishes between eight labour categories. They used a panel data set for Germany, and the model was developed for the total number of workers and total working hours. This was further divided into skilled- and unskilled-labour in full-time employment, by using the estimated coefficient for wage-elasticity for both working hours and workers for each of the labour input categories in each of the industries. The estimated labour demand elasticity showed that full-time skilled and unskilled workers are both gross substituted.

Hao et al. (2012), analysed the impact of services trade on the services industry labour demand elasticity. They used time series data of China's service sector from 1982 to 2009. In order for them to measure the gross impact of exports on labour demand elasticity, they developed a co-integration regression. The study firstly concluded that China's services exports had a stimulating impact on the labour demand elasticity of the domestic service market. In the long-term they found that the substitution effect is much more powerful than the output effect, but that in the short-term the output-effect was found to be more powerful that the substitution effect. Secondly, they found that they could not reject the hypothesis of no relationship between import openness and labour demand elasticity of the services industry in the long-term. When they studied the results in the short-run, the labour demand elasticity is weakly influenced by trade liberalisation. They found that a 10% increase in export penetration resulted in a 2.67% increase in labour demand elasticity as an absolute value.

Kijong (2011) analysed the impact of policy targeting specific employment programmes by using the Social Accounting Matrix. This study proposed the modification of the model in order to analyse the multiplier effects of a new sector. This is accomplished through different input compositions or technology, which creates a conventional analysis of final demand injections on the existing sectors invalid. The comprehensive use of input-output multiplier analysis enabled him to map out the industry-level employment generation due to an application of an external shock. After a 9.3 billion rand injection, based on the cost estimation

presented by Friedman et al. (2007), the shock implemented in the model measured the indirect and direct effects on unemployment. This also expresses the distribution of employment across different household types, and how much the job targets countering inequality. As designed in the new sector formulation 78.5% of direct jobs to the ultra-poor workers and only 2.8% indirect jobs go to the ultra-poor workers. Also the unemployment rates decreased from 62.9% to 48.2% for ultra-poor households. Additionally, the unemployment rates decreased from 62.9% to 48.2% for ultra-poor households. Thus, a significant effect towards ultra-poor households was found in the analysis.

Mitra (2011) conducted a study on the effect that trade in India has on employment focussing on the services industry. He based the study on time-series macro-data, as well as the indirect and direct effects of exports and imports on employment. This was also divided into the effects of trade in formal and informal services. The value added includes the impact of imports and exports. They separated their effect by regressing the value added originating from a particular activity on total non-agriculture value added, and all the imports and exports corresponding to that activity. After they substituted the results into the first equation for formal services sector employment, they then derived the indirect and direct effects of imports and exports on employment. In the following step, they calculated the elasticity of the services industry employment using data from National Sample Survey cross-sectional data for the years 1999 to 2000 and 2004 to 2005. The concluding results indicated that exports had a positive effect on employment in trade and hotel activity, but had a negative effect in the transport and finance industry. Slaughter (1999) conducted a study to determine if international trade has an effect on own-price elasticity of demand for United States labour. This specific study formulated three main conclusions. Firstly, the demand for labour inputs became more elastic, in five of the eight manufacturing industries, for the years 1961 to 1991. Secondly, for the same time span, non-production labour became less elastic in demand within all eight of the tested manufacturing sectors. Finally, they had mixed results to support the hypothesis that trade contributes to an increase in elasticity. The study also concluded that elasticity decreases over time, thus having the contrary effect in the long-term.

Sing et al. (2012) developed a model to forecast the labour demand for the construction industry. It is a mathematical model developed through a distribution lag model and labour multiplier approach. This is comprised from testing data from the Hong Kong construction projections. The labour multiplier they used assumes that there is a relationship between construction output and labour demand per unit of construction. Thus the labour multiplier makes use of the correlation between construction output and labour demand. The projected labour demand can then be calculated by applying the corresponding labour multipliers calculated from labour deployment divided by the project expenditure for the selected project. The development of the model was done through four steps. Firstly, the model forecast the possible future economic conditions in terms of Gross Domestic Product. Data used in this step was quarterly time-series data of selected economic variables. Secondly, they used quarterly time-series data of construction output for forecasting. Thirdly, the labour multipliers forecast the labour demand in terms of man-days. Finally, the labour demand is forecast for the number of workers required. The study also concluded that it is highly important to select an appropriate economic scenario in order to create an efficient model.

Thus, from the above studies the conclusion can be made that the increase of exports had a predominantly positive effect on employment. Furthermore, these studies also found prominent inter-linkages of services sectors within the economy. The following section will discuss and summarise specific firm level studies regarding the impact of an increase in exports on employment.

2.3.2 Micro-level impact of increased exports on employment

The gains from international trade are reflected as comparative advantage, based on the differences in factor endowments and production technologies between the trading countries revealed under free trade. Thus firm gains from international trade are maximized when they increase their production facilities and consolidate this through effective Mergers and Acquisitions in order to rationalize production, reduce the average cost of production and thus creates better competitiveness in the international markets. International trade also creates gain through increasing returns to scale. This is achieved by increasing production size and lowering average costs, which is illustrated by the following equation (Robert & Daniel, 2005):

TC = FC + (VC)X

TC = Total Cost;

FC = Fixed Cost;

VC = Variable Cost;

X = Output

Given the above formula average production cost is equal to total cost divided by output. Thus the larger the production scale becomes, the lower the average cost will be, if the variable cost is constant. Thus when the quantity produced is increased it will effectively become cheaper per unit produced, resulting in more effective production. The average cost is represented by the following equation (Robert & Daniel, 2005):

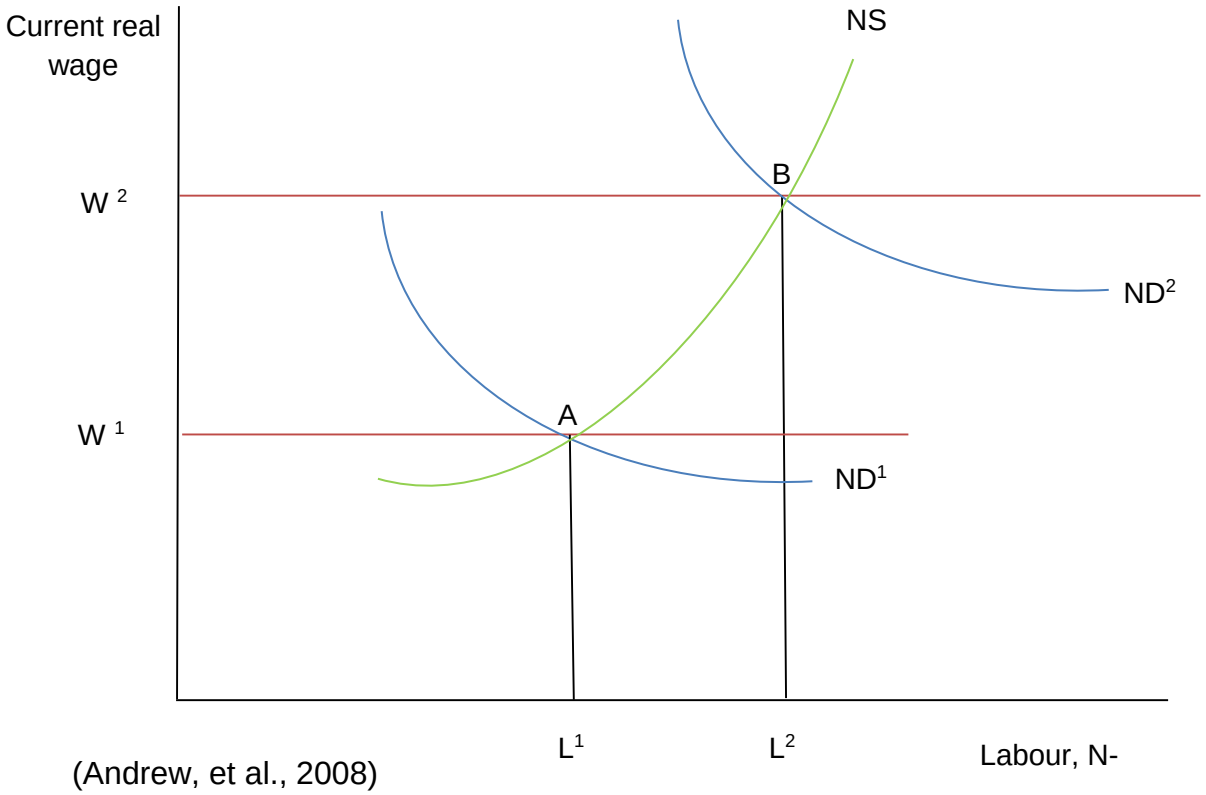
AC = FC/X + VC

If a firm can become more efficient in the trade of financial services for instance, it can play a prominent role in a nation's economic growth. This will only be effective if multiple firms can be highly competitive in the global market based in the domestic economy. Cui and Shen (2011) conducted a study to empirically prove that an increase in trade of financial services could stimulate economic growth. Firstly they found that, there is a long-term relationship between trade in financial services and economic growth. Secondly, according to the regression equation applied, international financial services have a positive correlated effect on economic growth. Thus, if a firm can combine international trade in financial services and become more efficient by lowering the cost of producing the financial services, it has the effect of economic growth for the domestic nation.

When a firm meets a specific output for a specific price of demand, it may produce a different amount of output and employ a different amount of employees. Then the question arises what amount of labour will be effective for the production of the specific firm (Andrew et al., 2008). This is indicated in Figure 2.1. The *effective labour demand curve* (see Figure 2.1 ND curve) indicates what amount of labour is needed for a specific amount of output, with productivity, capital stock and effort held constant (Andrew, et al., 2008).

The labour market equilibrium requires that the aggregate quantity of labour demand is equal to the aggregate supply of labour. The classical model for the labour market is based on the assumption that real wages adjust quickly to equate supply and demand for labour. Thus, the assumption can also be made that when labour supply is low for scarce workers, real wages will be higher, and conversely, when many labourers compete for fewer jobs, real wages will decline.

Figure 2.1 Effect of supply shock on the labour market



(Andrew, et al., 2008)

A positive supply shock can increase the marginal product of labour and increase the demand for labour at any real wage level (Andrew, et al., 2008). Thus the labour demand curve indicated as ND^1 shifts to ND^2 and the labour market equilibrium moves from point A to equilibrium point B. This shock causes real wage to increase from W^1 to W^2, and increases the full-employment level of employment from $L-^1$ to $L-^2$ (Andrew, et al., 2008).

By combining the labour market equilibrium (see Figure 2.1 for the labour equilibrium) and the production function (which measures the relationship between amounts of output compared to labour needed as an input for production), the amount of output a firm wants to supply can be determined (Andrew, et al., 2008).

Full-employment (potential output), Y, is the level of output that the firms in the economy supply when the prices have fully adjusted (see Figure 2.1 for the labour equilibrium). Thus full-employment output is when the level of aggregate employment is equal to the full employment level, N (Andrew, et al., 2008).

$$Y=AF(K,N)$$

The above equation indicates that, for constant capital stock (K), full-employment output (N) is determined by two determining factors, namely, full-employment level of N, and the production function relating output to employment (Andrew et al., 2008). When referring back to the average cost formulation, it states that the increase in production will result in more effective production (see Section 2.3.1). Thus when production is increased, more labour is needed to increase labour- intensive production. This increase in production creates a surplus in production which can be exported into foreign markets. The surplus production strategy thus, creates employment (higher labour inputs are needed) and also lowers the average cost of production per unit (see Section 2.3.1). This is supported by the research by Slaughter, where he found that international trade determines labour demand elasticity through either the output effect (increase or decrease in output) or the substitution effect (substitution of domestic products by products imported) (Slaughter, 1999).

Greenaway et al. (1998) investigated the impact of trade on industry- level employment for a sample of 167 manufacturing firms in the United Kingdom. They built a dynamic labour demand equation and incorporated exports and imports in the panel framework from 1979 to 1991. Their study indicated that the increase in trade volumes, causes a reduction in the demand for labour. This is consistent with the views that increased trade liberalisation will have the effect of more efficient and productive labour which is utilized within firms. Thus they found limited evidence that substitution of domestic workers for foreign workers increases wage elasticity for the derived labour demand function. The study's shortcomings included the fact that they did not divide labour into its categories, thus labour demand elasticity was included into one equation. Krishna et al. (2001) used Turkish plant-level data in order to measure the effect of trade liberalisation on labour demand elasticity. They estimated an equation for each industry used in the data pooled. In their study, they

were unable to find any empirical support for the theoretical link for the impact of trade on labour markets, but in most cases they could not ignore the hypothesis of a positive relationship between trade openness and demand elasticity.

The studies discussed in this section indicate that firms' gains from international trade are maximized when they increase their production facilities to reduce the average cost of production, thus creating better competitiveness in the international markets. International trade also creates gain through increasing returns to scale. When a firm meets this output for a specific price of demand, it may produce a different amount of output and employ a different amount of employees. Full-employment is the level of output that the firms in the economy supply when the prices have fully adjusted. The following section will discuss the results of studies and reports given the inter-linkages which specific services sectors have with other sectors within economies.

2.4 Forward and backward linkages within specific sectors

The previous section discussed the relationship between export expansion and employment creation. This section will discuss the results of studies and reports given the inter-linkages which specific services sectors have with other sectors within economies.

One of the most prominent dimensions of interconnectedness of industries is the nature of buyer and supplier linkages. The scale of buyer and supplier linkages into the local economy is a factor of the output supported by industry operations and indirect employment (Hewings, 1982). Output growth and disposable income of lower income households have a strong linkage. The growth of output is linked directly to final consumption and connected services, such as transport services and trade (Maurizio & Claudio, 2007). Sectors which make the largest contribution to domestic employment are not the same as the sectors with the highest inter-industry linkages (Midmore, et al., 2006).

The services industry has started to play a more prominent role within the manufacturing value chain, due to the production process being broken down into increasingly smaller processes. More specifically, business services are becoming an important input for the manufacturing of goods as well as services. In 2006, the

OECD conducted an input-output analysis, aimed at identifying how the manufacturing and services industries interact in the production process. The most prominent findings were as follows (Lesher & Nordas, 2006):

- The business services industry has become a prominent contributor to GDP growth within OECD countries.
- Business services within OECD countries show stronger forward linkages than the average forward linkage within the manufacturing industry. In contrast to this, the forward linkages for the manufacturing industry are stronger for developing countries.
- Small and developing countries within the OECD gain from trade in business services primarily from a more specialised and broader business service supplier. The trade in business services results in more variety, which increases welfare.

Thus, it was found that business services are becoming increasingly more important for OECD countries. Manufacturers and firms use these services as intermediate inputs, which also has significant spill-over effects (Lesher & Nordas, 2006). Furthermore, the more specialised the services sector becomes, the more productive the sector becomes (Hauknes & Knell, 2009). Services sectors such as food, health, recreation, child care and similar household services, as well as retail and business services, exhibit a strong role in supporting economic activity (Kay, et al., 2007).

Multiple countries, which were agriculturally based economies, have started to transition into more services based economies. These, countries also rely specifically on the strong impact of tourism, which has strong backward linkages within the economy. Thus, sectors such as accommodation and eating and drinking sectors provide goods and services to the end-users. Furthermore, the transport sector, which specifically supplies tourist arrivals, exhibits strong forward linkages (Pratt, 2010). The construction industry has also shown strong linkages with other sectors in the economy. Research has found that construction uses manufacturing as well as services as inputs for the industry. More specifically in developed countries, the share of manufacturing inputs for construction has decreased over time, where services inputs have increased, indicating stronger linkages with the services industry (Rameezdeen & Ramachandra, 2008).

The foundation of backward linkages for services firms is the success of these firms within foreign markets. These services firms also need internationally competitive manufacturing industries as support. Furthermore, the knowledge-intensive business services sectors are the new growth creators, and because of the backward linkages, the lack of industrialised sectors in countries can prevent growth (Conti, et al., 2014). Thus, it is important for the domestic sectors to have strong inter-linkages before services are exported, so that the services industry uses the domestic economy's inputs for exporting.

Blancas (2006) conducted a study on the inter-industry linkage that detects the flow of funds, by using the accounting multiplier approach in the Social Accounting Matrix model. As an empirical application for the analysis, he estimated the accounting multipliers and the financial and real linkage indices for the Mexican economy. When applying the inter-industry linkage analysis and the Rasmussen's method used in the framework for the input-output model, he estimated and identified two types of linkage indices. The forward linkage and financial backward indices are derived from the Social Accounting Model accounting multipliers. Both the financial institutional and production sectors' transactions are measured through inter-institutional analysis, which is estimated from the Social Accounting Matrix model's flow of funds. The analysis consisted mainly of cross-sectional representations of the economy, monetary and financial accounts, accounting identities and standard empirical relations that typify developing countries. The accounting linear multipliers used are predominantly demand driven in Keynesian tradition, where the supply constraints are ignored. The impact of total final demand is described as a round by round final demand that, given an injection and or change in the system, will consequently lead to a process of multiplier effects. Each account represented different types of linkages at each stage of path followed by exogenous cash flow injections in the way it impacts and enters each account in the process. Finally, he could identify from the analysis that the economy indicated dependency not on agricultural activities but rather on services activities and manufacturing activities, commercial banks and private economic agents, which indicates a more developed economy. On the contrary to this, he found that in the group and individual accounts displayed, common problems of financial disintermediation.

The study conducted by Ruiz-Napoles (2004) measured the effect of Mexico's export-led growth strategy and trade liberalisation policy on employment. The results for the input-output analysis indicated that there was a positive relationship between an increase in manufacturing exports and direct and indirect employment. More specifically, exports had a reduced effect on total gross output, because of a low level of backward linkages between exports and the domestic economy. The reason for this could be that because of higher imports of intermediary goods for manufacturing, the domestic backward linkages were low (Ruiz-Napoles, 2004).

Uri and Mixon (1981) endeavoured to measure the changes in employment in variation within different manufacturing industries. The evidence indicated that changes in imports and exports had a significant impact on employment patterns. The study concluded that employment in industries is dependent on increases in exports (Uri & Mixon, 1981).

Shepherd (2013) concluded in his study of services exporting firms that the services sector has rapidly grown in importance for the developing world. He also found that services exporting firms have mostly similar attributes to firms that export goods, including: higher productivity, higher growth rates, higher wages, higher investments and they are systematically larger than domestic firms (Shepherd, 2013). Lei (2011) concluded in his study that China can use the international trade of services to improve economic growth.

From all the studies discussed on a micro level, one can conclude that services are playing a prominent role in the value adding process for the manufacturing industry, and these services sectors are also prominently linked within the economy. Furthermore, the above macro- and micro-studies found prominent linkages between export growth and an increase in employment levels. The following chapter will discuss the role of the services industry as well as its exports play within the South African economy. The chapter will also discuss the economic policies in place for employment creation, and the inter-linkages of services sectors with other sectors.

2.5 Conclusion

International trade is directly linked to a country's specific lack of natural or human resources, which creates the trade in the specific lacked production factors. This is

either the trade in products or services, depending on the lack, or the specialization of the specific country. Thus, countries are motivated to trade because of the inability to be self-sustaining. The benefits of exports can be summarised as “gains from trade”, which includes higher competitiveness, knowledge transfer and allocative efficiency. Firstly, as firms have to compete with global firms, they have to be more innovative, use better business practices and use technology more efficiently in order to be competitive within a global economy. Secondly, when firms enter into export they are exposed to international technology trends, international product design and international consumer behaviour, which contributes to knowledge transfers. This develops the competitive performance of the firms entering into exports. Finally, evidence indicates that long-term international business survival enjoys faster sales and faster employment growth than the firms not entering into long-term international business (Montgomery & Tuladhar, 2013). Multiple studies have tried to determine the specific linkages between exports and employment growth.

Therefore, from all the studies discussed on a macro- and micro-level, one can conclude that services are playing a prominent role in the value adding process for the manufacturing industry, and these services sectors are also prominently linked within the economy. Furthermore, the studies discussed in this chapter found prominent linkages between export growth and an increase in employment levels. Therefore it is important to understand this link between exports and employment within the South African economy in order for both government and firms to make better strategic decisions.

The following chapter will discuss the South African government’s plans to create jobs through economic policy and export expansion. It will also discuss the influence of the services industry and its exports on the South African economy.

Chapter 3: South African services industry

3.1 Introduction

The aim of the previous chapter was to discuss the relevant trade theory, specifically focusing on employment and economic growth. Furthermore, it also motivated theoretically the impact exports have on employment and economic growth. The objective of this chapter will then be to discuss the on-going problem of unemployment in South Africa, as well as the government's plans to create jobs through economic policy and export expansion. It will also discuss the influence of the services industry and its exports on the South African economy.

Since 1994, after the restoration of democracy, South Africa has been under the governance of a single ruling party, the African National Congress (ANC) that has led the government policies since then. The country has experienced some challenges over the years, namely, violent crime, high corruption and high unemployment, which has caused a number of educated and highly skilled individuals to leave the country to safer destinations like the United Kingdom, New Zealand and Australia (Statistics South Africa, 2013). There are still some positive indications, which bare positive outlooks for the future. South Africa is faring seemingly well on governance indicators when compared to other African nations. South Africa is also growing in its international influence, joining BRICS, and the country also has prominent influence and relationships with neighbouring countries. South Africa is also seen as the gateway into Africa, featuring on international organizations such as the African Union and the Commonwealth of Nations (IHS Global Inc., 2014).

However, unemployment remains a great problem in South Africa. The services sector, however, has been growing in recent years and could provide a possible means of creating more jobs, as will be explored in this chapter and the empirical section. The chapter outline will firstly consist of the role that services has on the South African economy in Section 3.2. Thereafter, the different economic policy and action plans regarding employment in South Africa, and the influence this has on the services industry will be discussed in Section 3.3. Furthermore, the inter-linkages that the services sectors have with other economic sectors will be discussed in

Section 3.4. Finally, in Section 3.5 a brief conclusion and summary will be given of this chapter.

3.2 The role of services in the South African economy

3.2.1 South Africa's economy in recent years

The South African economy is the most developed in Africa, but has been passed by the Nigerian economy in 2014 (IHS Global Inc., 2014). South Africa has indicated economic growth of 4.25% between 2001 and 2008 (pre-crises), and 1.54% in 2009 due to the financial global meltdown. In 2010, the growth rate moved to 2.89% and increased to 3.46% in 2011. This growth was stimulated by the expansion of the secondary and tertiary sector.

In 2012 the growth rate slumped again to 2.55%, because of rising labour unrest, higher inflation expectations, electricity supply constraints and the decline in investor confidence. In 2013, South Africa indicated a GDP growth rate of 1.9%, which is lower than 2012, indicating that the economy is struggling to create the needed growth opportunities for South Africa (Statistics South Africa, 2013). All of the above factors have contributed to the depreciation of the South African rand against the main world currencies. The value of the South African rand has depreciated 22.3% between May 2012 and July 2013, stimulated by factors such as the unrest at Lonmin's Marikana mine in August 2012.

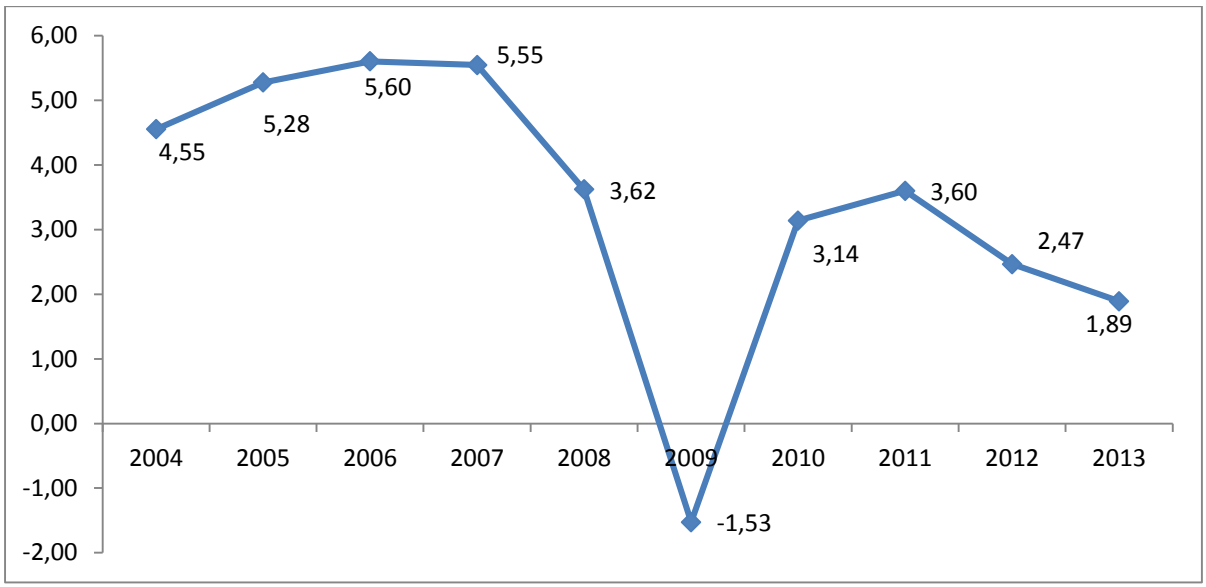
The South African economy has indicated an average GDP growth rate of 2.2%, throughout the years 2008 to 2012, whereafter the GDP growth rate lowered to 1.9% in 2013. Alongside the relatively low GDP growth rate, the average inflation rate between 2008 and 2012 was 6.7%, with a 5.7% inflation rate for 2013. Furthermore, the South African Current Account was in deficit for the years 2008 to 2012, with an average of -15.85 billion dollars, and a high of -26.6 billion dollars for 2013 (Statistics South Africa, 2013).

The economy has struggled to create the needed growth for sustainable job creation, with high labour unrest and industrial disputes, while the South African currency weakened. The increased amount of industrial unrest represents a significant downside for economic growth, where wage concessions would heighten inflationary

risk, which has increased as investors continue to abandon the rand, as part of the general retreat from emerging markets. This weakening of the rand has increased the competitiveness of South African exports, which increased by 16% in the first half of 2013. However, imports have also grown just as fast as exports, where a favourable shift within the income balance has been offset by a widening of the transfers deficit. The current account deficit moved to $35.6 billion, which could increase even further if strikes continue throughout the economy (IHS Global Inc., 2014).

South African economic growth has been subject to some obstacles, such as continued strikes within the mining and manufacturing industry, a weakened currency which adds to inflation along with increased wage prospects, as well as increased costs for services (IHS Global Inc., 2014). Figure 3.1 indicates the GDP growth rate for South Africa between 2004 and 2013.

Figure 3.1 GDP growth rate for South Africa 2004-2013

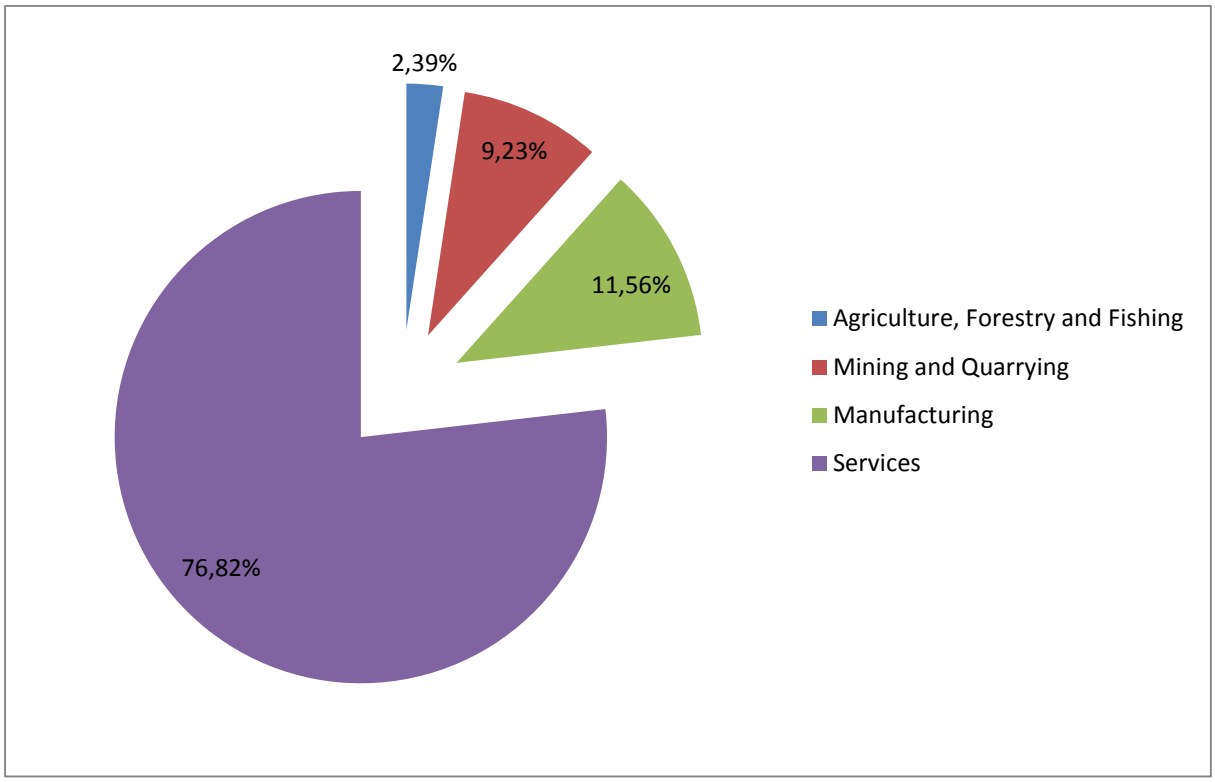


(Source: World Bank, 2014)

The high percentage of GDP growth started in 2004 with 4.55%, which increased to 5.28% in 2005, and reached its high at 5.6% and 5.55% in 2006 and 2007. Thereafter, the GDP growth rate started to decline with the world economic crises, with rates lowering to 3.62% and -1.53% in 2008 and 2009. In 2010 there were more positive outlooks with the GDP growth rate increasing to 3.14%. This was followed

by poor performance of growth rates declining from 3.6% in 2011, to 1.89% in 2013. Because the economic growth outlook for South Africa is not positive, and the prospect of job creation also lowered, it is important that the public and private sector strive to create employment and sustainable economic growth. This can only happen if policy and the private sector goals are aligned to reach this goal. The following figure indicates the GDP value added per sectors in millions of rand.

Figure 3.2 Annual value added by industry (percentage of GDP share in 2013)



(Source: StatsSA, 2013)

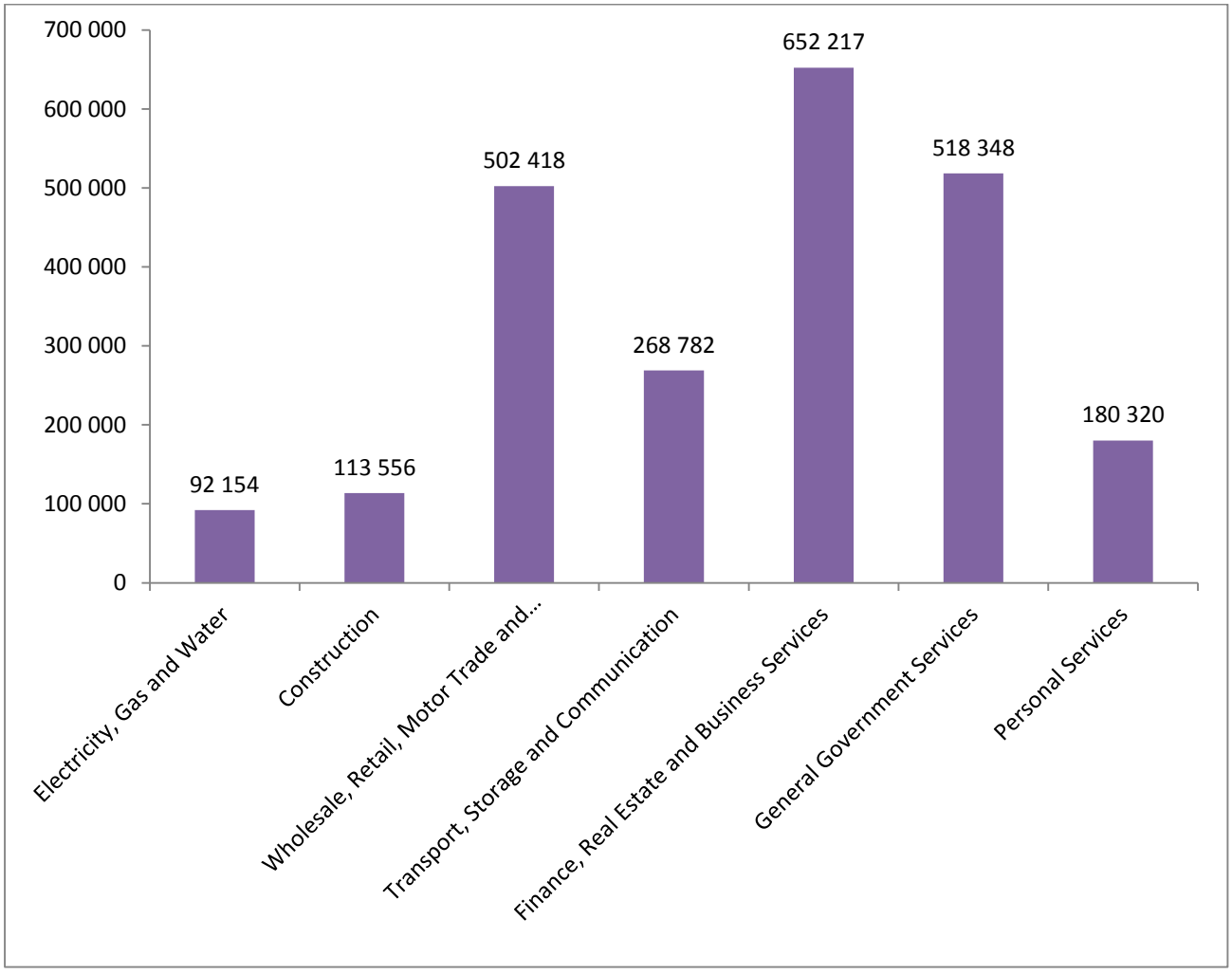
In 2013, the most prominent value addition to South African GDP was the services industry (R2 327 795 million), with 77% of the value added portion. The manufacturing industry (R350 345 million) and mining industry (R279 691 million) followed, with 12% and 9% of value added respectively. Finally, the agriculture, forestry and fishing industry (R72 431 million) had the lowest contribution of 2%. Thus, the services industry has more than double the value added GDP contribution within the South African economy. The growth in the manufacturing industry (12.3%) was due to an increase in economic activity in sectors such as, food and beverages, petroleum, chemical products, rubber and plastic products, motor vehicles, parts and

accessories and other transport equipment. The mining industry also indicated positive growth (15.7%) due to the increased production of commodities such as, gold, metal ores including platinum and diamonds. Thus, the services industry is the most prominent overall economic contributor for South Africa.

3.2.2 Services in the South African economy

Figure 3.3 below indicates the contribution of each services sector to GDP in South Africa.

Figure 3.3 Annual value added by services sector for gross domestic product at current prices in 2013 (R million)



(Source: StatsSA, 2013)

The wholesale, retail and motor trade sector has shown positive growth for 2013 due to the increased turnover in wholesale and retail trade, as well as catering and

accommodation divisions. Thereafter, the increase in finance, real estate and business services was due to the growth in commercial banking activities.

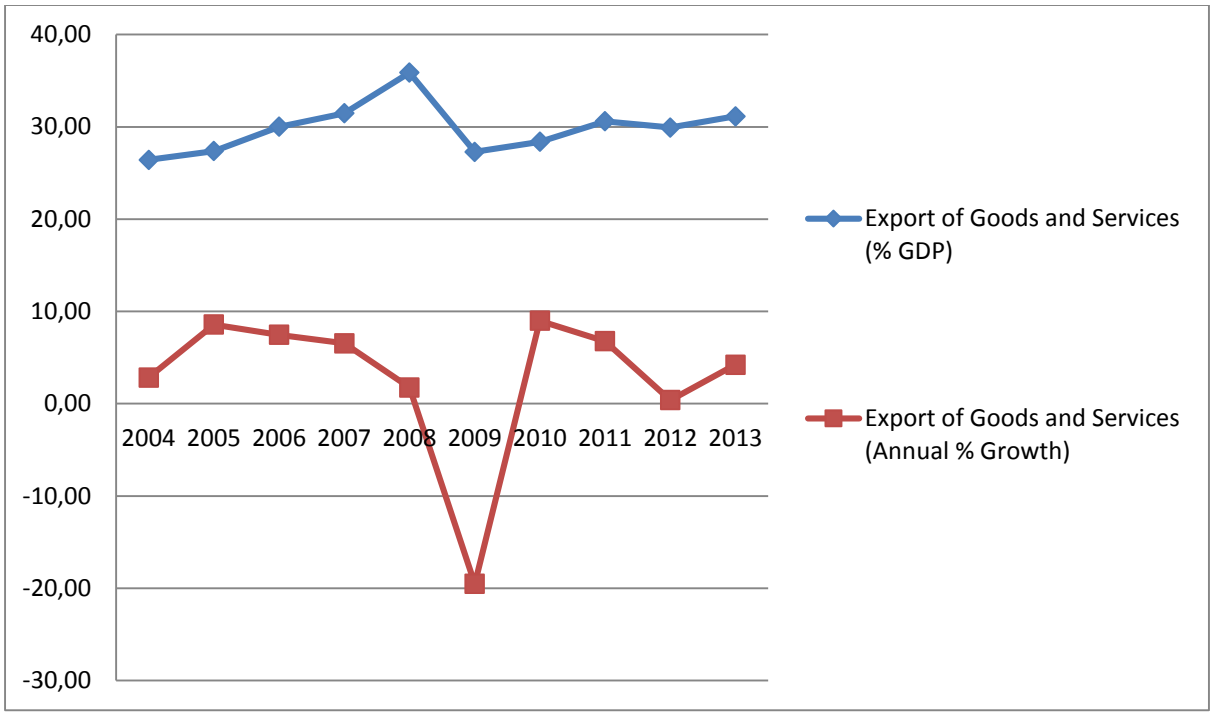
The most prominent sectoral performers for 2013 were finance, real estate and business services which expanded from R598 billion in 2012 to R652 billion in 2013, which represents a 21.5% of value added. The general government services industry also indicated good expansion from R466 billion in 2012 to R518 billion in 2013, which represents a 17.1% value adding in 2013. The wholesale, retail and motor trade sector expanded from R455 billion in 2012 to R502 billion in 2013. The transport, storage and accommodation sector expanded from R258 billion in 2012 to R269 billion in 2013. The wholesale, retail and motor trade, transport, storage and accommodation sector represents 16.6% of value added in 2013. Finally, personal services expanded from R170 billion in 2012 to R180 billion in 2013, which represents 11.6% of value added in 2013. The following section will provide the relevant background on the export of services for South Africa between 2004 and 2013 (StatsSA, 2013).

3.2.3 South African export of services

The South African economy has strengths in its sound banking sector, its strong tourism industry and investments in infrastructure. Firstly, South Africa's banking system is considered to be world class, with a strong regulatory and supervisory environment, sufficient capital resources and innovative technology and infrastructure. Secondly, in 2011 South Africa emerged as one of the most successful tourist destinations in the world, with growing rates of visitors each year (StatsSA, 2013).

South African exports have not seen exponential growth rates in recent years; competitiveness remains constrained as the global demand remains below trend and the rand remains volatile. Contributing factors for export constraints include infrastructural impediments and slow global demand (IHS Global Inc., 2014). Figure 3.4 illustrates the percentage of GDP exported in terms of goods and services, as well as the annual percentage of growth from 2004 to 2013.

Figure 3.4 South African exports of goods and services 2004-2013

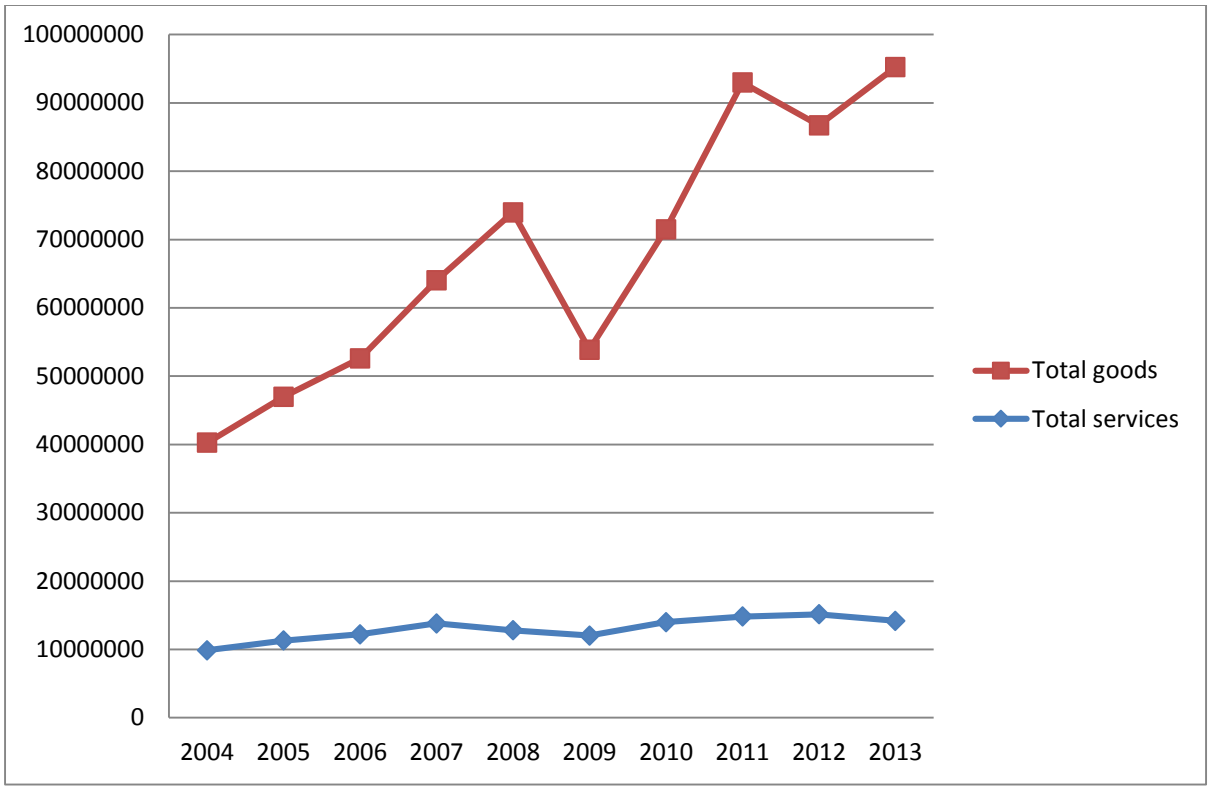


(Source: World Bank, 2014)

The percentage of goods and services exports as a percentage of GDP has remained consistent around the 30% margin since 2004, with the peak being in 2008 at 35.88%, where after it declined to 27.29% of GDP in 2009. From the year 2010 the percentage gradually started to increase again to the maximum of 31.14% in 2013. Thus, the trend seems to be moving upwards, and exports of goods and services are playing a more prominent role as a contributor to GDP. When comparing South Africa's trade of goods and services with the United States, we find that United States exports of goods and services increased by 2.8% in 2013 to a record of 2.3 trillion dollars, which is 13.5% of GDP (International Trade Administration, 2014). Thus, South Africa exports a larger portion of GDP than the United States.

Figure 3.5 illustrates services exports in US dollars between 2004 and 2013, as reported by Trade Map.

Figure 3.5 South African goods and services exports 2004-2013 in USD



(Sources: ITC, 2014)

The exports of goods grew consistently between 2004 and 2008, with a large decline in 2009 (-37%) due to the global financial crises. Thereafter, the export of goods increased to a new high in 2011 (23%), with a small decline in 2012 (-7%), where after in 2013 (9%) exports increased again. The exports of services have grown consistently since the year 2004, where a minor decline occurred between 2008 (-8%) and 2009 (-7%). After 2009, services exports started increasing again, with low volatility and a minor decrease in 2013 (-7%). Figure 3.6 illustrates the export of services in South Africa, as divided per sector, for the years 2011 to 2013.

Figure 3.6 South African services exports as per sector 2004-2013

Industry	2004	% Change 2004-2005	2005	% Change 2005-2006	2006	% Change 2006-2007	2007	% Change 2007-2008	2008	% Change 2008-2009	2009	% Change 2009-2010	2010	% Change 2010-2011	2011	% Change 2011-2012	2012	% Change 2012-2013	2013
Travel	6512600	13%	7516130	7%	8119830	8%	8778780	-10%	7956170	-4%	7624450	16%	9085040	5%	9514970	5%	9995912	-8%	9244557
Transportation	1417250	8%	1533220	-3%	1487680	17%	1801240	-16%	1557230	-13%	1378120	15%	1615190	7%	1735610	0%	1730828	-1%	1721138
Other business services	742261	11%	837124	4%	868263	26%	1175430	2%	1200620	-11%	1083610	3%	1115380	9%	1231300	-9%	1131002	-13%	1003432
Financial services	425629	20%	534349	24%	705604	19%	875715	-9%	804886	-13%	715094	14%	827263	8%	901373	-1%	891159	-3%	868296
Government services, n.i.e.	238172	8%	258906	14%	302009	6%	319879	22%	411300	-13%	364382	6%	386973	2%	396543	9%	436885	-5%	414790
Insurance services	105837	15%	124307	18%	152084	29%	214048	15%	251061	-12%	223226	18%	273046	15%	319478	-8%	295623	-11%	265563
Computerand information services	89004	19%	109391	15%	128755	42%	222823	-10%	203161	17%	245242	15%	290021	9%	318755	-8%	294621	-12%	262445
Communications services	188542	2%	193004	26%	260336	-12%	232975	-11%	210145	4%	219212	1%	221746	-6%	208233	-12%	185263	18%	224580
Royalties and license fees	37392	17%	45302	1%	45784	13%	52914	2%	53738	-13%	47726	19%	59186	10%	6567	2%	67324	-7%	62818
Personal, cultural and recreational services	87864	23%	113821	-10%	103347	-14%	90270	9%	98997	-36%	72797	-9%	66835	-1%	66457	-13%	58865	-8%	54359
Construction services	27977	19%	34553	14%	39980	26%	54356	6%	57950	-25%	46539	26%	62816	3%	65010	-7%	60853	-15%	52747

(Source: ITC, 2014)

Figure 3.6 indicates that the export of services are growing and becoming a prominent contributor towards South African GDP. The largest exporter within the services industry is the travel sector, with substantial exports which peaked at 9 billion dollars. Analysis of the remaining services sectors within the South African economy indicates that there can be a greater deal of growth in exports, with the majority of services sectors exporting less than 1 billion dollars. The export of services has also indicated volatility, where sectors have high growth rates in one year and decreases in the following year. For example, a sector such as construction services grew 26% between 2009 and 2010, and 3% between 2010 and 2011, and declined by 7% between 2011 and 2012. The following section will discuss the challenge of unemployment in South Africa and plans and policies in place to stimulate economic growth.

3.3 Employment creation plans for the South African services sector

The previous section discussed the role that the services industry has on the South African economy, as well as the contributions of the services industry exports. The following section will address the ongoing challenge of unemployment within the South African economy. This includes the specific plans and policies in place to stimulate sustainable economic growth, job creation and export promotion. Furthermore, we will also discuss the current employment division, as well as the unemployment situation within the South African context.

3.3.1 Industrial Policy Action Plan (IPAP)

The South African unemployment rate of 25%, has indicated to be a problem for policy makers. Even though the South African economy has seen some upside in economic growth since the 2009 recession, the growth rate has failed to absorb the needed South African labour force. South African has seen its labour force grow by approximately 500 000 to 700 000 job seekers annually, as reported by Statistics South Africa, whereas the economy has only been able to create about 460 000 jobs annually.

The Industrial Policy Action Plan (IPAP) is framed by and constituted as a key pillar of the programmatic perspective set out in the NGP (see Section 3.3.3). The programmes set in IPAP 2014 reflect the constant readjustment and response to

shifting opportunities and demands, which are needed to keep this mandate alive. The main goal of IPAP is to use the set of solutions for major fault-lines of South Africa's economic structure, to create a policy shift emphasis in favour of the productive sectors of the economy. In order to deliver on the given objectives the following key areas of intervention will continue (DTI, 2014):

i. Economy-wide

This will include stronger macro- and micro-economic policies, and greater implementation. Furthermore, the stronger alignment of industrial policies and programmes with the NEDP (see Section 3.3.2) will be implemented. Finally, better alignment to specific sector strategies, particularly focused towards sectors in which the domestic economy enjoys a global comparative advantage.

ii. Procurement

This will include efforts to secure compliance with existing public procurement strategic supplier development measure and policies, with the overall aim to support the manufacturing sector.

iii. Industrial finance

The strengthening of the alignment of industrial financing across the IDC (see Section 3.3.2) and all DFI's, through a mix of public and private sector spending.

iv. Development trade policy

The continued strengthening of developmental trade policies, which specifically focus on selective and strategic tariffs (alignment with trade policy), more detailed cooperation with the Customs Division of the South African Revenue Services (SARS) and the steady strengthening of the capabilities and capacity of the Standards, Quality Assurance, Accreditation and Metrology (SQAM) institutions.

v. Competition policy

The strengthening of interventional combat with anti-competitive and collusive behaviour in both State Owned Companies and the private sector.

vi. Regulation and intellectual property

The creation of a regime to create a supportive environment for South Africa's industrialisation objectives like the Intellectual Property Rights (IPRs) regime.

vii. Innovation and technology

The implementation of new programmes and policies to strengthen the competitive capabilities of the production and services sector.

The IPAP document is most prominently focused on the manufacturing industry, because of specific reasons. The document states that these reasons include the fact that the manufacturing industry has the highest employment and economic multipliers. They also motivate that the manufacturing industry has high backward linkages toward the primary industry, services industry and the entire value chain. They also motivated that manufacturing must be central to their export strategy, based on the labour-intensive and value-added tradable products, which has a positive effect on the balance of trade. This includes the funding of the following sectors to the value of (DTI, 2014):

- R5.5 billion for the green industry;
- R828 million in Chemicals and Allied Products;
- R686 million in mining and minerals beneficiation;
- R552 million in Metal, Transport and Machinery Products;
- R396 million in Textiles and Clothing;
- R334 million in Forestry and Wood Products;
- R239 million in ICT;
- R130 million in Agro-industries;
- R6.6 million in Media and Motion Pictures;
- R393 million in Healthcare.

Thus, the overall direction of the Industrial Policy Action Plan (IPAP) is focused more towards the manufacturing industry (Department of Trade and Industry, 2010).

3.3.2 National Exporter Development Programme (NEDP) and Industrial Development Corporation (IDC)

The NEDP specifically focuses on small micro and medium enterprises, drawn from previously disadvantaged individuals, as well as the larger potential and established exporters. The NEDP is also in line with the South African policy environment, which includes the NGP (see Section 3.3.3), and takes into account the global environment. Figure 3.7 illustrates the NEDP's development plan strategy. The purpose of the NEDP is to promote and increase in products and services which add value and contribute to employment and the green economy.

Figure 3.7 National Exporter Development Programme (NEDP)

(Gouws & Moore, 2013)

In order for the NEDP plan to be successful the Department of Trade and Industry is required to show strong leadership through:

- Setting realistic targets agreed by all partners
- Creating an environment steering towards stronger cooperation and partnership
- Continuously motivating all stakeholders

- Establishing standards for all components of the NEDP
- Ensuring that sufficient resources are available to implement the programme
- Developing a monitoring and evaluation programme together with all partners.

The NEDP also has a vision to ensure the successful planning and implementation of the plan. The mission of the NEDP includes the development of a pool of export-ready companies, ensuring that new markets and products are developed to grow exports, ensuring that effective resources are available for development, providing leadership for exporters, facilitating collaboration between stakeholders in the private and public sector, and monitoring the programme and ensuring continuous improvement. The NEDP furthermore identified five phases of export development, namely (Gouws & Moore, 2013):

"***Phase 1:*** The Explorer is the enterprise that is exploring options for developing the business, of which exporting might be a possibility.

Phase 2: The Export Aware enterprise has some idea of what exporting entails, is export-ready in some aspects, but lacks basic export skills.

Phase 3: The Export Ready Company has the basics in place and needs to develop an export marketing plan.

Phase 4: The Start-up Exporter is export-ready and has completed an export marketing plan, which now needs to be implemented to achieve initial orders.

Phase 5: The Global Exporter may have been exporting for a number of years and now needs to further penetrate markets, develop new markets, or develop new products."

The NEDP also supplies support services such as a national information network including an export call centre, integrated export website, different levels of training, mentoring arrangements and assisting with export promotion (Gouws & Moore, 2013:19).

3.3.3 National Development Plan (NDP) and National Growth Plan (NGP)

The National Development Plan (NDP) is South Africa's long-term vision of an equitable society. The NDP aims to reduce inequality and eliminate poverty by 2030. The Commission that created this document believes that the country can create 11 million additional jobs by 2030 through (National Planning Commission, 2013):

- Improving economic policy coordination and implementation
- Building partnerships between the public sector, business and labour to facilitate, direct and promote investment in labour-intensive areas
- Raising competitiveness and export earnings through better infrastructure and public services, lowering the costs of doing business, improving skills and innovation, and targeting state support to specific sectors
- Strengthening the functioning of the labour market to improve skills acquisition, match job seekers and job openings, and reduce conflict.

They also state that in order to create economic transformation the rate of economic growth must surpass 5% per annum. To bring this about they propose the following implementations (National Planning Commission, 2013):

- Increasing exports
- More efficient and competitive infrastructure
- Reducing the cost of living for low-income and working-class households
- Reduced cost of regulatory compliance
- A larger, more effective innovation system
- Support for small businesses
- An expanded skills base
- Strengthened financial services
- A commitment to public and private procurement
- A higher rate of investment
- A labour market that is more responsive to economic opportunity
- Enhanced commercial diplomatic services

All of the above objectives complement the goals of the New Growth Path (NGP), which will require businesses and labour to endorse a shared vision to accomplish the 5% economic growth target per annum.

There is a growing consensus that inequality must be reduced, poverty must be eliminated and the creation of decent jobs is needed, which can be done through a new growth path founded on the restructuring of the South African economy. This will create more effective labour absorption and improvements in performance through higher economic growth, which is in line with the vision of the NDP (National Planning Commission, 2013).

The basic objectives of the NGP are:

- A comprehensive drive to enhance both social equity and competitiveness;
- Systematic changes to mobilise domestic investment around activities that can create sustainable employment; and
- Strong social dialogue to focus all stakeholders on encouraging growth in employment-creating activities.

As a first step towards economic reform the government will address the following key sectors:

- Infrastructure
- the agricultural value chain
- the mining value chain
- the green economy
- manufacturing sectors, which are included in IPAP2, and
- tourism and certain high-level services.

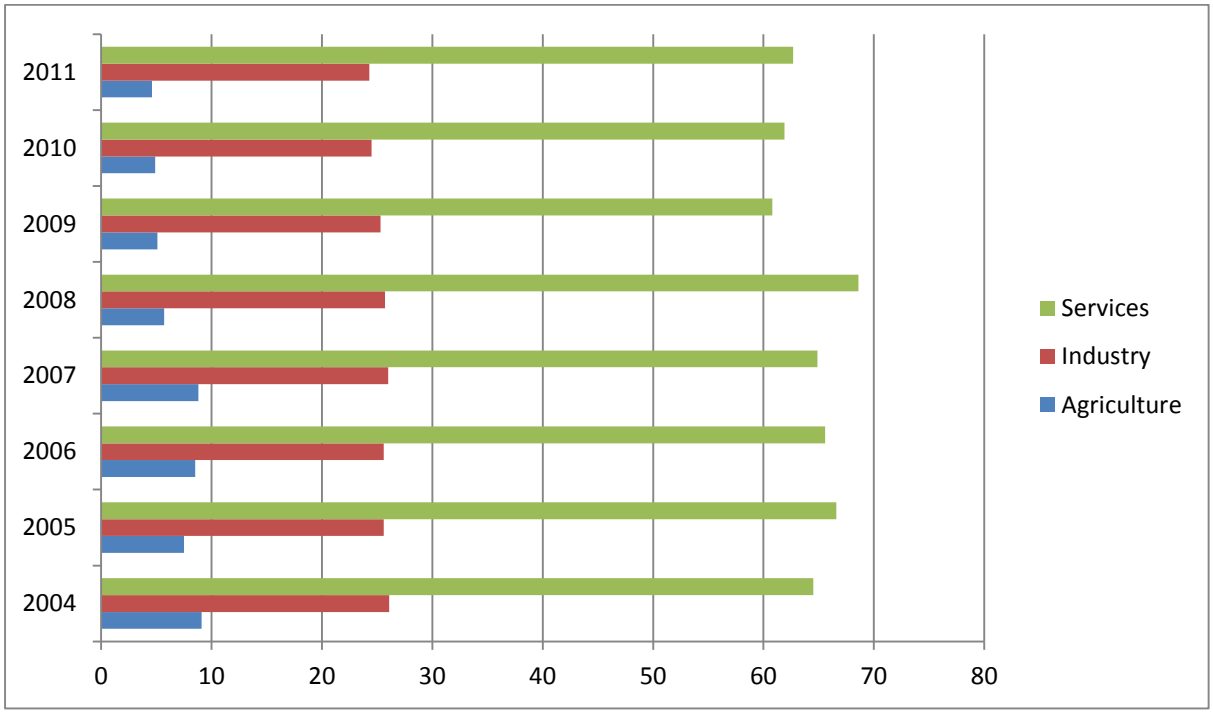
These key sectors will be the drivers of economic growth and labour absorption and will be developed in line with the NDP and IPAP documents. These key objectives are also supported by the macroeconomic and microeconomic packages, which ensure the containment of inflationary pressure and the enhancement of competitiveness, as well as social equity and regional development.

3.4 Employment division in South Africa

South Africa continues to struggle with its high unemployment rate of 25%, which may be due to structural problems such as; high real wages, rigid labour laws, high levels of unionized labour force and the lack of the appropriate work skills. Even though the South African economy has seen some upside in economic growth since

the 2009 recession, the growth failed to absorb the needed labour force. The South African labour force is growing approximately between 500 000 and 700 000 job seekers annually, as reported by Statistics South Africa, where the economy was only able to create about 460 000 annually. In 2013 the employment outlook started to look more positive as employment increased by 141 000, primarily because of the increases of employment in the informal sector (123 000) and the formal sector (64 000) (Statistics South Africa, 2013). Figure 3.8 illustrates the employment division within the agricultural, industry and services industries of South Africa, as a percentage of total employment between 2004 and 2011.

Figure 3.8 Employment division of South Africa (% of total employment) 2004-2011



(World Bank, 2014)

The highest percentage of total employment has remained within the services industry since 2004, at a rate above 60%. This is double the combined employment within agriculture and industry, with agriculture at 5% and industry at 25% of total employment. Thus the services industry has contributed to the highest amount of employment in South Africa. In 2014, the manufacturing industry indicated a 0.3% (3000 employees) decline from December 2013 This was primarily because of the

decline in sectors such as manufacturing of furniture, chemical products, dairy products and plastic products. Within the services industry, sectors such as the construction (5000 employees or 1.2%), financial intermediation, insurance, real estate, business services (collectively 7000 employees or 0.4%) and community, social and personal services (50 000 employees or 2.1%) saw employment growth from December 2013 to March 2014 (Statistics South Africa, 2014). The following section will discuss the relationship between the services industry and exports in South Africa.

3.5 The relationship between employment and services exports in South Africa

The previous section discussed the ongoing challenge of unemployment within the South African economy, which included the specific plans and policies used to stimulate sustainable economic growth, job creation and export promotion. Furthermore, the section also discussed the current employment division, as well as the unemployment situation within the South African context. This section will focus specifically on South African studies conducted to identify the effects of export expansion within the domestic economy.

The European Union (EU) and China remain South Africa's main trading partners. South African agricultural exports have grown between 1997 and 2008. The exports which did not stem from labour-intensive agricultural products indicated a decline in low-skilled agricultural employment. It was concluded that there could be a negative correlation between agricultural export expansion and low skilled employment (Mbatha, 2011). Rankin and Schoër (2013) conducted a study on the relationship between exports and wages at a worker level in South Africa. The results indicated that firms that export to SADC countries' wages are lower than firms producing for the domestic market. Furthermore, the study concluded that firms exporting to international markets pay increasing premiums for education, thus focusing on educated and skilled labour (Rankin & Schoër, 2013).

Kucera et al. (2012), conducted a study on the effect of trade contraction and employment in India and South Africa. The most prominent conclusion made was that India and South Africa experience substantial employment declines as trade contracts, specifically with the United States and the EU. The majority of these declines occurred within the non-tradable sectors and were a result of income-

induced effects (Kucera et al., 2012). A study done by Naude and Rossouw (2011), discusses the relationship between export diversification and economic performance for Brazil, China, India and South Africa, or the BRICs. The study concluded that GDP per capita changes are a driving force for export diversification. Furthermore, the study found that the South African economy indicated a positive relationship between export diversification and economic development.

The study conducted by Rangasamy (2009), evaluated the economic policy for South Africa regarding export production as a growth indicator. The paper also measured whether the emphasis on specific export production is justifiable. The study concluded that deliberate policy measures which stimulated export production contribute to the growth prospects of the South African economy (Rangasamy, 2009). Altman (2006) conducted a study which explored two different economic scenarios for employment creation for South Africa, with specific focus on the services industry. In the first scenario, current economic conditions remained constant and the study concluded that unemployment remained the same. In the second scenario, which included substantial improvement of economic policies, specifically the promotion of trade in services, unemployment was reduced by 20%.

Therefore one can conclude that wages will increase as the skills and education of labour increases. Furthermore, the studies indicate that trade stimulation fuels economic growth and job creation. This raises the question whether an increase in exports of services will lead to a significant increase in employment, and in which specific services sectors the largest increase would be found. The answer to this question could provide useful insights for policymakers as well as firms wishing to make strategic decisions regarding export expansion. The following chapter will discuss the methodology used in this study in an attempt to provide answers to this question.

3.6 Conclusion

This chapter discussed the role that services has within the South African economy, as well as the role the exporting of these services. Furthermore, the chapter also discussed the specific policies used in South Africa to create sustainable economic growth, job creation and export promotion, and the specific focus points of these

policies. Finally, it discussed the linkages that services sectors have with other sectors within the economy.

The economy has struggled to create the needed growth for sustainable job creation, with high labour unrest and industrial disputes, while the South African currency has weakened. The increased amount of industrial unrest represents a significant downside for economic growth, where wage concessions would heighten inflationary risk, which has increased as investors continue to abandon the rand, as part of the general retreat from emerging markets. This weakening of the rand has increased the competitiveness of South African exports, which increased by 16% in the first half of 2013. However, imports have grown also just as fast as exports, where a favourable shift within the income balance has been offset by a widening of the transfers deficit. The current account deficit moved to $35.6 billion, which could increase even further if strikes continue throughout the economy. The most prominent sectoral performers for 2013 were finance, real estate and business services which expanded from R598 billion in 2012 to R652 billion in 2013, which represents a 21.5% of value added. The general government services industry also indicated good expansion from R466 billion in 2012 to R518 billion in 2013, which represented a 17.1% value adding in 2013. The wholesale, retail and motor trade sector expanded from R455 billion in 2012 to R502 billion in 2013.

The exports of services have grown consistently since the year 2004, where a minor decline occurred between 2008 and 2009. After 2009, services exports started increasing again, with low volatility and a minor decrease in 2013. The US export of services totalled a record of 682 billion dollars in 2013, which is a 32.6 billion dollar increase from 2012. The South African government has focused its policies predominantly towards the manufacturing and agricultural industries, with little focus towards the services industry. Multiple countries, which were agriculturally based economies, have started to transition into more services based economies. The services industry has proven to indicate high stability, as well as stable job creation.

The chapter also reviewed multiple studies regarding the role of exports within the South African economy. Multiple studies indicated a positive role between export expansion and job creation. Some of the studies also found that export expansion has a negative relationship with low-skilled employment. Furthermore, export and

trade expansion for the services industry indicated a reduction in unemployment within the South African economy.

The following chapter will describe the methodology that will be used for the SAM Multiplier analysis, followed by a description of the development of the labour multiplier for the empirical analysis of the services industry. The chapter will also provide an overview of the Social Accounting Matrix (SAM) Multiplier model and more specific explanations regarding the employment side of the model. Furthermore, the chapter will also discuss the SAM Multiplier decompositions, and the data used for the analysis will be described. Finally, the chapter will also discuss the process used in the empirical analysis, and provide the steps taken to process and analyse the data.

Chapter 4: Methodology of the empirical analysis

4.1 Introduction

The previous chapter discussed the on-going problem of unemployment in South Africa, as well as the government's plans to create jobs through economic policy and export expansion. It also discussed the influence of the services industry and its exports on the South African economy. The objective of this chapter is to describe the methodology that will be used for the SAM multiplier analysis, followed by a description of the development of the labour multiplier for the empirical analysis of the services industry. Section 4.2 will provide an overview of the Social Accounting Matrix (SAM) multiplier model and more specific explanations regarding the employment side of the model. Section 4.3 will discuss the SAM multiplier decompositions. In Section 4.4 the data used for the analysis will be described. Section 4.5 will discuss the process used in the empirical analysis, and provide the steps taken to process and analyse the data.

4.2 The Social Accounting Matrix (SAM) Multiplier Model

The SAM model explains through a general table of a region or nation, by listing the regional or national economy accounting data within a square table. The SAM itself is a tool used to study the interdependence of the economy accounts and industry structures (Provide, 2003). Within the SAM model, two main methods are found. The first method is the multiplier decomposition which reveals the multitude of the global effect in the endogenous account. The second method is the structural path analysis which indicates the mechanism and operations path of external injections.

4.2.1 Describing the Social Accounting Matrix (SAM)

A SAM contains information about the flow of resources associated with all transactions in a specific period of time between specific economic agents (Provide, 2003). The initial theoretical development was done by Sir Richard Stone which addressed the matter of integrating disintegrated production accounts. Thus the main goal was to form a comprehensive economic-wide database, which included information about all the productive activities in the economy, as well as incorporating unproductive institutions and markets, such as capital markets, factor markets, government, households and the rest of the world (Provide, 2003). Firstly, it

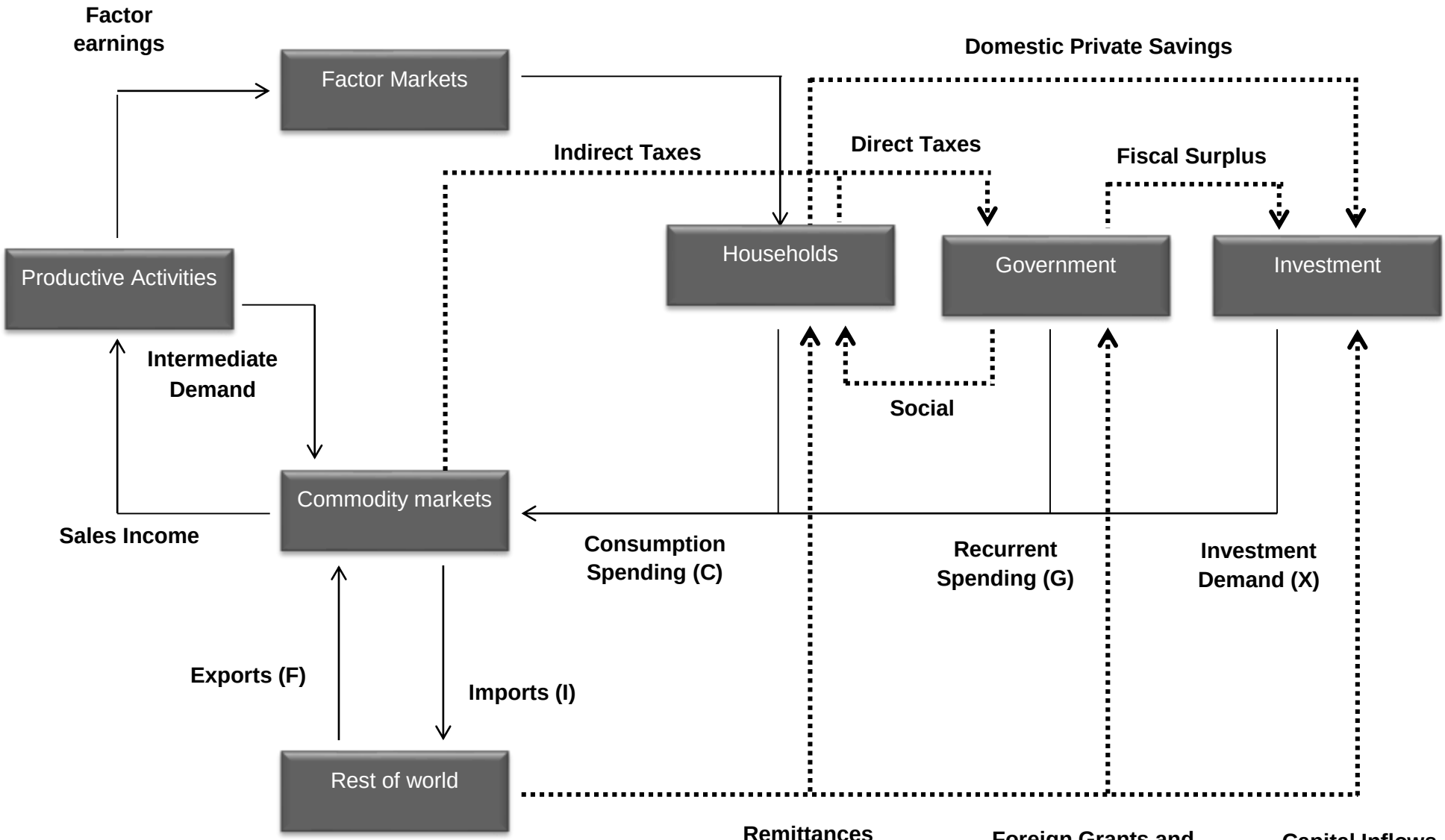
organises the information for the social and economic structure of the economy, and secondly provides a statistical basis for plausible economic models (King, 1985). Thus the acceptable definition for SAM is "*a comprehensive economy-wide framework presented in the form of a square matrix*" (Lofgren, et al., 2002).

The objective of the SAM model is firstly to, organise the data when agents are involved in transactions with one another and financial resources exchange hands (Provide, 2003). Furthermore, SAM captures the transactions in the relevant accounts, which indicates the direction of flow of resources. Thus, SAM forms the complete database for all transactions that take place in a certain period of time, and gives a static image for the economy for that period in time (Provide, 2003). The comprehensive breakdown for SAM includes producers, governments, households, all economic agents and the rest of the world. This is broken down even further into capital, factor and commodity markets. SAM can be seen as intermediate clearing accounts; the transactions recorded in the model are not limited to the purchase and selling of goods and services, but rather include all transactions. Thus the model will also include the purchasing of intermediate goods, hiring factors, current account transactions for government, enterprises and households, such as inter-institutional transfers, payment of taxes and consumption expenditure. As stated by Reinert, and Roland-Holst (1997: 95), "Economic accounting is based on fundamental principle of economics. For every income or receipt there is a corresponding expenditure or outlay. This principle underlies the double-entry accounting procedure that makes up the macroeconomic accounts of any country."

The SAM reveals links between economic accounts, by integrating all kinds of economic flows. Figure 4.1 below indicates the relationships in the SAM model through a flow diagram of the economy. Figure 4.1 indicates transfers and real transactions between institutions and sectors. The productive activities purchase capital inputs, labour and land from factor markets and the intermediate inputs from the commodities market, which are all used to produce goods and services. These inputs are supplemented by an import (I), which is then sold through the commodity markets to households (H), the government (G), investors (X) and foreigners (F). Each institution's expenditure becomes another institution's income, as indicated in the flow diagram. To use an example, the government and household purchases of the commodities provides the income that producers need in the production process.

Furthermore the inter-institutional transfers, such as savings and taxes, ensure that the circular flow of income is closed, thus ensuring that all expenditure flows are accounted for. The SAM model has the following advantages: it links macro-economic indicators, gives an overall summarised perspective of an economy, enables multiple factoring and multiple sectoring, enhances the reliability of statistics, contributes to increased relevance and reliability in national accounts and it pinpoints gas in available datasets (Statistics South Africa, 2005).

Figure 4.1: SAM circular flow diagram of the economy



(Breisinger, et al., 2009)

The following section will provide an overview on the specific assumptions used in the SAM model. This is followed by descriptions of the formulas used and the structure of the model.

4.2.2 Social Accounting Matrix (SAM) equations, assumptions and structure.

The SAM model indicates in a quantitative manner the interdependence of all agents and economic activities over a specific time frame in a specific economic area. Thus the SAM model captures income and household consumption linkages, which then captures the full effects of changes in the economy (Breisinger et al., 2009). In the SAM model, total output equals demand as indicated by:

$z = Bz + x$

In the above equation *z* indicates or is equal to total output, and *Bz* equals the sum of endogenous demands, and *x* exogenous demands. In this equation the endogenous production, value-added, and household expenditure as shares of total expenditures is represented by *B.* The exogenous account includes the capital account, government account, as well as domestic and foreign trade. Thus the above equation can be used to determine the impact of change in exogenous demand on the total output, which includes all changes in endogenous demand resulting from the exogenous change. The changes in the formula can be illustrated as follows:

$z = (I-B)^{-1}x = Mx,$

Where $M = (I-B)^{-1}$

So that $\Delta z = M\Delta x$

As indicated above, the matrix represented by M captures the impact that exogenous change (shock) in demand has on endogenous production, value-added, and household expenditures (Boshoff & Plessis, 2009). Thus the model reflects that the increase in demand for specific sectors creates demand for intermediate goods produced by other firms. The impact then is that these firms pay their employees additional wages to produce the extra goods, and the workers, as consumers in the market, spend their additional income on goods and services in the economy. Thus in the equilibrium, the vector which is indicated by Δz summarises for all factors,

firms and households in the specific economy the direct effects and indirect effects in the form of household expenditures, new wage payments and producer supply feedbacks.

It can then be concluded that, each sectoral multiplier represents the induced flow of income to one account for services performed for another account, the result of one unit change in exogenous expenditure placed in another sector. If the exogenous change in demand is for goods, the multiplier is a production multiplier. If the exogenous flow is directed towards households, then the multiplier is an income transfer multiplier. This study will specifically be focussing on the change in employment (employment multiplier), indicated by the change created in employment by the increase in output of a specific sector.

The general application for the SAM model can be weakened, through its underlying assumptions. Firstly, income elasticity is assumed to be equal to 1. The implication of this is then that the SAM multiplier model understates the increase in household income, for the demand in luxury goods, and then on the contrary over states the impact on demand for necessities (Breisinger et al., 2009). Secondly, fixed prices in the model imply that that only quantities adjust to clear markets. Finally, the SAM model is demand driven, implying that the supply response is perfectly elastic, meaning that downstream industries are able to maintain the flow of intermediate goods and that there are always under-utilised resources to meet the increases in demand. The SAM model also implies that employment gains and losses are permanent and instantaneous (Provide, 2003). These assumptions are, however, relatively harmless when a small shock is applied. In the long run, the small shocks are too small to have a significant effect on prices. They also do not result in supply shortages, and given that it is small changes in consumption triggered by the small simulated shocks, the marginal consumption propensities will not vary greatly from average propensities (Wobst, 1998).

4.2.3 Components of Macro-SAM and Micro-SAM

The SAM can be separated into either a macro-SAM or a micro-SAM. A macro-SAM will provide the main macroeconomic characteristics of the economy, and will set the basic data framework for the further development of a Micro-SAM (Wobst, 1998). In the Macro-SAM each activity will produce one or more commodity using factor

services and intermediates. Also commodities are supplied by activities and imports, through demand for exports and domestic final and intermediate use. In a Macro-SAM the factor services is produced by capital, labour, land and then other natural resources. It also includes entities that own factors, which consumes and invests, also receives or pays taxes and transfers.

A Micro-SAM partitions certain accounts into more detailed classifications. It includes the disaggregation of accounts for commodities, activities, households and factors. Micro-SAM more specifically shows how different household groups earn and spend their incomes. For the purposes of this study, the Macro level SAM will be used.

4.2.4 Division of sectors by the Social Accounting Matrix (SAM)

The SAM model for South Africa is comprised of 48 sectors (activities), which includes the services industry with 12 main services sectors namely (StatsSA, 2012):

1. *Electricity:* Electricity, gas, steam and hot water supply
2. *Water:* Collection, purification and distribution of water
3. *Building and Construction:* Building, specialists trade contractors, building installation, building completion. Site preparation; construction of civil engineering structures and construction of other structures; renting of construction/ demolition equipment with operators
4. *Trade:* Wholesale trade, commission trade (except of motor vehicles and motor cycles), retail trade; repair of personal and household goods, sale, maintenance and repair of motor vehicles and motor cycles and retail trade in automotive fuel
5. *Accommodation:* Hotels, camping sites, other provision of short stay accommodation; restaurants, bars, canteens
6. *Transport:* Transport, supporting and help activities related to transport
7. *Communication:* Post, courier activities and telecommunications
8. *Finance and Insurance:* Financial intermediation, insurance and pension funding
9. *Real Estate:* Real estate activities
10. *Business Services:* Other business activities
11. *General Government Services:* Other individual and collective general government

12. *Community, Social and Personal Services:* Human health, veterinary and social work activities. Education, other services and other activities n.e.c.

The above-mentioned sectors will be used within the empirical analysis.

4.3 Multiplier decompositions

In the development of a simple multiplier model, the first step is to decide which accounts should be exogenous and which should be endogenous. Normally, the transactions in the government account, the capital account, and the rest of the world account are regarded as exogenous. This is because of the fact that government is determined by policy, and the external sector is outside domestic control. Furthermore, because the model has no dynamic features, investments is exogenously determined (King, 1985). The corporate enterprises are treated as either endogenous or exogenous determinants. In the simple multiplier model, the endogenous accounts are all production activities, all factors of production, and households and private institutions. By defining the endogenous transactions, two sets of agents (production activities and households) interacting in two markets (factors and commodities) are identified.

In Table 4.1 below the simplified Social Accounting Matrix (SAM) is illustrated. As stated above, it is necessary to divide accounts into endogenous and exogenous accounts before any quantitative analysis can be done. In the simplified SAM as illustrated in Table 4.1, endogenous accounts include three activities, factors and institutions (US Department of Commerce, 1997). The activities account illustrates the integration of all production activities. The factor account will include the production factors such as capital, land and labour. Finally, the institutions account includes households and enterprises, where households are partitioned as residence and income level. The exogenous accounts are indicated by capital, government and the rest of the country (US Department of Commerce, 1997)

Table 4.1 Map for a simplified Social Accounting Matrix (SAM)

Expenditure/ Income		Endogenous accounts			Exogenous accounts	Total
		1. Activities	**2. Factors**	**3. Institutions**		
Endogenous accounts	**1. Activities**	T_{11}		T_{13}	X_1	Y_1
	2. Factors	T_{21}			X_2	Y_2
	3. Institutions		T_{32}	T_{33}	X_3	Y_3
Exogenous accounts		L_1	L_2	L_3	LX	Y_4
Total		Y_1	Y_2	Y_3	Y_4	

(Morilla, et al., 2004)

In block T_{11} the demand for intermediate inputs among production activities are captured, which is the flow of the input-output table. Then in block T_{13} the expenditure mode on products of various institutions are captured. Then in block T_{21} the value-added created by the production activities among all factors is captured. Then in block T_{32} the distribution of factor income different enterprises and households is captured. Then in block T_{33} income transferred within institutions, among enterprises and various groups of households is captured (Breisinger, et al., 2009).

The SAM model can be used as the basis for a simple modelling, under assumptions such as fixed prices, demand orientation and linear relationships among all the economic accounts (Jones, 2010). In order to get the numerical value of each required element, the corresponding element of the SAM must be divided by the total of the column which contains the element. By using the A_n to denote the matrix average expenditure and then according to the pattern of 3 x 3 endogenous accounts block An in the simplified SAM, it is found that (Wobst, 1998):

$$A_n = \begin{bmatrix} A_{11} & 0 & A_{13} \\ A_{21} & 0 & 0 \\ 0 & A_{32} & A_{33} \end{bmatrix}$$

The totals of column and the corresponding row are equal in the SAM model, and the total income of endogenous accounts is indicated by the following (Breisinger et al., 2009):

$$y_n = A_n y_n + x$$

If the equation is transformed, then the relationship between the endogenous incomes y_n and the endogenous injections are indicated by x.

$$y_n = (I-A_n)^{-1} x = M_a x$$

In the matrix M_a, which is called the accounting multiplier matrix, it reflects the basic interflow of data flows of the SAM model. This specific matrix forms part of the core within the SAM framework. The M_a matrix also reflects all the global effects of the exogenous injections (x_i) on endogenous accounts (y_j). When we decompose the M_a

matrix, we can also understand the effects caused by exogenous injections (Statistics South Africa, 2005).

4.4 Description of the data used in the South African Social Accounting Matrix (SAM) model

The previous section discussed the decomposition of the SAM model in general, which gives the description for constructing a Social Accounting Matrix model. The following section will discuss the data composition used in the construction of the South African SAM.

4.5 South African Social Accounting Matrix (SAM)

The previous section discussed the data composition used in the construction of the SAM model. This section will discuss the development of the South African SAM model. This will be comprised of firstly the SAM model on the national level, secondly the specific model design for labour demand in the services sectors, and finally the effects of export expansion on the labour multiplier developed.

4.4.1 SAM model on a national level

The South African SAM model includes 26 different household and sectoral surveys for the year 2000, which includes expenditure and income as well as labour surveys. The labour factors are broken into educational attainment, which is a proxy for skill level, as well as gender, to generate four different labour factor groups. Further, the households are divided into urban and rural areas, residence type which is formal and informal housing, race which includes African, Coloured, Asian and White, and finally income level which is divided into ultra-poor for the below 25 percentile, poor between 25-50 percentile, and non-poor for the above 50 percentile. This ultimately generates 20 household types. The South African SAM model also identifies the specific flows of income towards the different types of households. This is indicated through the income distribution matrix, which also indicates income flow across both gender and skill levels (Kijong, 2011).

There are also three additional accounts added into the South African SAM model; firstly, unskilled male and female labour and secondly, an EPWP sector which employs this unskilled labour, and thirdly, the inputs used to produce the EPWP

output. With the inclusion of these additional accounts, some assumptions and procedures are also added. The *first assumption* would be that the sector does not have any leakages, such as capital accumulation, taxes and trade. This assumption then keeps the process simplified by keeping the reformulation within the endogenous accounts. In addition to this, the data for the leakages are not available. The *second assumption* is that the sector does not hire economy-wide unskilled labour, but instead hires the unskilled labour from poor and ultra-poor households. Then the skilled labour is employed on an economy-wide basis. The second assumption is necessary for incorporating employment targeting for the poor and ultra-poor households as mandate. The earned income from the EPWP sector is set as a tiny fraction of the total earned income. In order to derive the multipliers for the income effect of the EPWP, the shares by household type is used to the corresponding column sums (Davies & Thurlow, 2013).

The *third assumption* deals with the spending of the earnings in the EPWP. It is assumed that households spend all their income, which is a small fraction of originally earned income, on purchasing services. This assumption is necessary to keep the original household expenditure data used in order to avoid rebalancing of the South African SAM. Total expenditure by households, which is the column sum, remains equal to total income by the household type, which is the sum of the row. The average expenditure is a fraction when compared to the total consumption by the household type. This assumption will allow the researcher to balance the household expenditure account and keep the equilibrium in the market. The *fourth assumption* deals with the input-output accounts, which is that the monetary value of services and goods in the sector used in the production process matches sector-by-sector with the monetary value of output used as inputs by other sectors. In this assumption the original input-output matrix remains the same; given the fact that the prior input-output model had a lack of data, the assumption is necessary for balancing the entire system without estimations. The average expenditure and associated multipliers are extremely small. These small values ensure that the hypothetical input-output section is excluded in the multiplier analysis process (McDonald, et al., 1997). The following section will explain how the South African SAM can be used for the purposes of this study, which includes the application of the productivity, GDP and labour multipliers.

4.4.2 Model design for productivity, GDP and labour within the services sector

For the purpose of this study, the South African SAM model will include specific focus towards labour multipliers for the services sectors in South Africa. The aim of this study is to determine the most employment-intensive services sectors and its linkages with other sectors within the South African economy, in order to determine recommendations for policy makers towards sustainable economic growth and job creation. This can be done by using the SAM and applying a “shock” to the data to determine the spill-over effects between services and the other sectors in the economy. These spill-over effects can be measured in terms of spill-over to productivity, GDP and labour. Therefore all three spill-overs will be measured and discussed in this study.

In the simplest form of the labour multiplier, it is assumed that there is a direct relationship between services sector output and the demand for labour in that specific sector. Fundamentally, the labour multiplier makes use of the correlation between services sector output and demand for labour in this sector. If a fixed labour multiplier is assigned to a specific work trade as services sector output, then subsequent labour demand can be determined (Persad, et al., 1995). The use of this model is deemed as reasonably reliable (Proverbs, et al., 1999). Even if this approach is straightforward, the application of the model requires detailed analysis parameters such as service sector output. The following equation describes the labour multiplier used in the model:

$M^i = D^i/C^i$

M^i = labour multiplier of the sector *i*

D^i = labour used for sector *i*

C^i = expenditure for sector *i*

The labour demand for service sector is indicated by the following equation:

$D^i = M^iE^j$

D^i = projected labour demand for sector *i*

E^j = projected expenditure for service sector

This labour multiplier approach assumes that the demand for labour is a function of output. Using the collected data in the SAM model, the labour multipliers for each sector are divided by the labour deployment with sector expenditure of each sector.

The final economic base labour multiplier is illustrated by the following equation:

$T = B + N$

T = Total Employment

B = Basic employment in the specific sector

N = Non-basic employment in the specific sector

$M_1 = T/B$

M_1 = Total employment generated per basic employment

Thus the equation illustrates the employment created for a specific sector in the service industry. This formula will indicate the amount of change in employment for a specific service sector. In this equation we assume that a profit maximising firm will employ labour where it is at the same level as marginal revenue product of labour (Greenaway, et al., 1998).

4.4.2.1 Formulation of the multipliers

The input-output table is the subset of the SAM made of the activity and commodity accounts only. In order to simplify the model, activities and commodities have been aggregated. Input-output tables are used to assess the impact of final demand of a given sector. The theory used for this model is based on the Leontief model. This section will discuss the process and formulation of the production, GDP and labour multipliers for the input-output model used in the empirical analysis of this study (Blancas, 2006).

The aim of the model is that the amount of sectors *i*'s output required for the production of sectors *j*'s output X_{ij} is assumed to be proportional to sector *j*'s output X_j. Therefore, if a_{ij} is such an input-output coefficient, then:

$$X_{ij} = a_{ij}X_j, \quad i, = 1,\ldots,n.$$

The equilibrium for total demand and total supply for each sector is written as:

$X_i = \sum_{j=1}^{n} X_{ij} + F_i \quad i = 1,\ldots, n$, where X_{ij} is intermediate and F_i final demand.

Substitution equation (i) into equation (ii) yields:

$$X_i = \sum_{j=1}^{n} a_{ij} X_j + F_i \quad i = 1,\ldots, n,$$

The relationship between production and final demand is:

$$\Delta X_i = \sum_{j=1}^{n} a_{ij}\Delta X_j + \Delta F_i \quad i = 1,\ldots, n,$$

In this formula ΔX_i and ΔF_i represents the change in final demand and output of sector *i*. Thus, if the final demand for a specific sector *i* increases by F_i, initially production will increase by the same amount, $X^1_i = F_i$. However, this will increase the intermediate demand for all sectors, including sector *i* itself, by $X^2_i = \sum a_{ij} X^1_i$. In order to produce these intermediate inputs, more intermediate products are needed and there is a third round of effects $X^3_i = \sum a_{ij} X^2_i$. This will then lead to more and more rounds of effects, where the sectoral outputs keep on rising as a result of the higher intermediate inputs demand. For each of these rounds, the increase in output becomes smaller such that the total always has a limit. The following equation calculates this limit in matrix form (where ⇒ reads “which gives”):

$$X = AX + F \Rightarrow (I - A)X = F \Rightarrow X = (I - A)^{-1} F .$$

X = vector of outputs (X_i, $i = 1 = i = 1,\ldots, n,$)

F = vector of final demand (F_i, $i = 1,\ldots, n,$)

A = matrix of a_{ij}’s $i, j = 1,\ldots, n,$

I = unit matrix

$(I - A)^{-1}$ = multiplier used to calculate overall changes in sectoral outputs which results from change in final demand

When ΔX is known, the changes in input requirements can be calculated. When we assume the amount of labour category *k* needed for production of one product *j*, b_{kj}, is a constant. Thus, the total amount of labour *k* required can be calculated through:

$$L_k = \sum_{j=1}^{n} b_{kj} + X_j \quad k = 1,\ldots, s,$$

This equation can also be written in matrix form:

$$L = BX$$

L = vector of labour requirements (L_k, k = 1,…, s,)

B = matrix of b_{kj}'s, k = 1,…, s,; j = 1,…, s,)

An input-output model is assumed to have a dual price system, which is a set of cost prices in a linear framework. The output prices are then calculated by taking the factor prices and tax as given, under the assumption that the returns to the fixed factors are also proportional to supply X, that is $\pi_j = r_j X_j$, and indirect taxes are proportional to the market value of the supply, which is $T_j = t_j p_j X_j$. The following equations represent the cost-price that equality of receipts and payments in each sector implies.

$$p_j X_j = \sum_{i=1}^{n} p_i X_{ij} + \sum_{k=1}^{s} w_k L_{kj} + \pi_j + T_j, \quad j = 1,\ldots, n.$$

When dividing both sides of equation (viii) with X_j, we have

$$p_j = \sum_{i=1}^{n} p_i a_{ij} + \sum_{k=1}^{s} w_k b_{kj} + r_j + p_j t_j, \quad j = 1,\ldots, n.$$

Then equation (ix) can be written in matrix form as:

$$p = A'p + B'w + r + tp \Rightarrow p = (I - t - A')^{-1} (B'w + r)$$

Where p, w, and r represent the vectors of output, labour and fixed-factor prices, respectively, and the t is a matrix is t_j, j = 1,…,n, on its diagonal. Thereafter, the prime (') after A and B represents the transposed of these matrices.

To summarise the matrix model formulas:

	Endogenous Accounts (n)	Sum of exogenous accounts (l)	Total
Endogenous Accounts (n)	MX	F	X
Exogenous accounts (m)	BX	L	
Total	X		

The matrix of multipliers = $(I - M)^{-1}$

The vector of shocks = ΔF

The vector of impacts = $\Delta X = (I - M)^{-1} \Delta F$

The leakages = $\Delta L = B \Delta X$

When an injection or "shock" is applied, it is given by the change in elements of the exogenous accounts. In this model the multipliers, like their input-output analogues, are completely demand driven. The exogenous accounts located in the rows of the model provide the "leakages". The leakages mentioned are, for example the induced savings and induced government spending (McDonald, et al., 1997).

The multiplier analysis includes direct, indirect and induced effects which can be summarised as follows (Plumstead, 2012):

- If the mining industry can be used as an example, the direct impact would be the expenditures used to construct and operate a mine, such as labour, materials and capital.
- The indirect effects would then be the suppliers of the mine, expanding production and purchasing goods and services in order to meet the expanded demand.
- The induced effect is a result of the employees of the mine purchasing goods and services on a household level.

The above model can thus be used to determine the link between a specific sector's expansion and the labour intensity of that sector. Furthermore, the model is not only

limited to measure labour intensity, but can also measure the specific GDP and production spill-over effects for a specific sector within the economy. The following chapter will illustrate the implementation of the above SAM model specifically to measure the effect of an increase in exports on the services sector in South Africa. This will include the analysis of the results for the labour, GDP and production multiplier effects throughout the South African economy.

4.6 Conclusion

This section will provide a summary of this chapter, in order to provide a compressed expression for the chapter. A SAM contains information about the flow of resources associated with all transactions in a specific period of time in between specific economic agents. Thus this study will specifically focus on the economic flow described by the South African SAM.

The objective of the SAM model is firstly to organise the data when agents are involved in transactions with one another and financial resources exchange hands. Furthermore, SAM captures the transactions in the relevant accounts, which indicates the direction of flow of resources. Thus, the SAM forms the complete database for all transactions that take place in a certain period of time, and gives a static image for the economy for that period in time. The comprehensive breakdown for the SAM includes producers, governments, households, all economic agents and the rest of the world. This is broken down even further into capital, factor and commodity markets.

A SAM can be split up into either macro-SAM or micro-SAM. A Macro-SAM will provide the main macroeconomic characteristics of the economy, and will set the basic data framework for the further development of a Micro-SAM. In the Macro-SAM, each activity will produce one or more commodity using factor services and intermediates. A Micro-SAM partitions certain accounts into more detailed classifications. It includes the disaggregation of accounts for commodities, activities, households and factors. A Micro-SAM shows more specifically how different household groups earn and spend their incomes.

Thus the SAM model can be used with a combination of multipliers such as; production, GDP and labour multipliers to measure the forward and backward

linkages within the South African economy. The results provide the direct, indirect and induced effects for each “shock” or stimulus applied within a specific sector. Thus, this “shock” can be focused towards a specific services sector, and the results can be tracked and measured throughout the South African economy. This will provide the needed information to identify the most labour-intensive services sectors in the South African economy.

Chapter 5 will illustrate the results and analysis for the SAM model and the multipliers used within the empirical analysis. The chapter will specifically focus on the impact of service sectors in the South African economy. Firstly, the chapter will discuss exportable services sectors, where-after the empirical results, regarding the labour, GDP and production multiplier will be analysed and discussed.

Chapter 5: Empirical Analysis and Results

5.1 Introduction

In the previous chapter, the methodology for the Social Accounting Matrix and multipliers used within the empirical analysis for this study was explained. The goal of the Social Accounting Matrix analysis is to measure the overall effect that the expansion of one sector can have on all the other sectors and these sectors combined, through production multipliers, GDP multipliers and labour multipliers. This model will specifically focus on the impact of the services sectors on the South African economy, and more specifically what an increase in the exports of services would mean for the economy. The results of this empirical study could provide some insight for policy makers, in terms of employment stimulation in the services sector. Thus this analysis will specifically identify the services sectors most prominent to create the highest employment rates within the South African economy.

The first step in the empirical analysis is to identify exportable services sectors, which will be discussed in Section 5.2. In Section 5.3, the empirical results for the services industry, regarding the production multiplier, GDP multiplier and the labour multipliers will be discussed. Finally, in Section 5.4 a conclusion will be drawn for this chapter.

5.2 Selecting exportable services sectors for analysis

This section will provide the relevant background, as well as information on the classification of services sectors within the SAM model. Thus, the services sectors summarised in the SAM will be discussed, and the relevant exportable services sectors will be discussed.

5.2.1 Social Accounting Matrix (SAM) services sectors which are exportable

In Chapter 1, the various methods of classifying services were explained. The most commonly used method is the WTO classification. In order to determine if the services sectors as defined in the SAM model are internationally tradeable, it is necessary to compare the definition of SAM sectors with services internationally traded as defined by the WTO, in order to determine which services sectors within the SAM model are exportable.

The Electricity and Water sectors as defined by the SAM model (See Section 4.2.4) are not included in the WTO tradable services sectors. It can be argued that these sectors are most prominently traded within the domestic economy - in South Africa these services are provided by the government. Therefore we will not be evaluating this sector as part of this study.

The following sectors in the SAM are not internationally trade-able according to the WTO defined services:

- Electricity and Water
- General Government Services

The following SAM services sectors are more tradable/ exportable than the others in commercial terms, and thus they will be used in the analysis of this study (see Section 4.2.4 for a description of each sector):

- Building and Construction
- Trade
- Accommodation
- Communication
- Finance and Insurance
- Real Estate
- Business Services
- Community, Social and Personal Services

5.3 Empirical results and analysis for the services industry

Each sector as defined by the Social Accounting Matrix sub-sectors was included as a primary market stimulus, in order to calculate the direct, indirect and induced multiplier effects in terms of production, GDP and labour. Each of the multipliers calculated was described in the previous chapter, and in order to calculate the multiplier effects, a 1000 million increase or shock (see Section 4.4.2) was applied to each services sector. This amount was chosen to ensure that the shock is substantial enough to indicate prominent linkages throughout the economy. The data used in the services industry analysis was comprised from the 2006 SAM data survey (StatsSA, 2014). This is the latest SAM data that was available in the duration

of this study. Even though the data was collected pre-2008 economic crisis, and may be viewed as old data, the goal of the analysis was to find the inter-linkages within the matrix model, and not to attain precise output figures. The assumption for the SAM model is that the representation of the structure of the economy, does not change that dramatically in a short period of time. Therefore the use of a newer version of the SAM data will very likely provide similar results. The complete empirical analysis for the services industry is presented by Table 5.4 through to Table 5.30 in the annexures. The tables in the annexures show the multiplier results for the Production, GDP and Labour multipliers, in terms of direct, indirect and induced effects. The following section will provide a summary of the empirical results.

5.3.1 Analysis for the Production Multiplier

The results in this section are illustrated in millions of South African Rand, and summarised as direct, indirect and induced production multiplier results for each sector, as defined by the SAM model. This section will specifically focus on the results for the production multiplier (see Section 4.4.2.1) after the shock was applied to each services sector as defined by the SAM model (see Section 4.2.4).

The following figure illustrates the total production multiplier effect of a R1 billion increase in each services sector throughout the South African economy in terms of the direct, indirect and induced multiplier effects (see Section 4.4.2.1). The figures give an indication of which sectors have the highest total production effect throughout the economy when exports are increased in each sector, and the inter-linkages with other services sectors. Table 5.1 ranks the economy-wide total for each sector and multiplier.

Table 5.1 Total effect for the production multiplier for each services sector in Millions of Rand

Activities	Direct	Rank	Indirect	Rank	Induced	Rank	Direct + Indirect + Induced	Rank
Building and Construction	1 195.72	1.00	1 159.17	1.00	1 231.71	3.00	3 586.61	1.00
Trade	600.45	9.00	409.94	8.00	652.21	9.00	1 662.61	9.00
Accommodation	1 164.82	3.00	895.84	4.00	1 265.03	1.00	3 325.70	3.00
Transport	1 061.97	5.00	820.57	5.00	1 087.03	8.00	2 969.57	5.00
Communication	1 079.12	4.00	904.42	3.00	1 124.93	5.00	3 108.47	4.00
Finance and Insurance	987.19	7.00	469.99	7.00	1 114.49	7.00	2 571.67	7.00
Real Estate	1 165.06	2.00	909.32	2.00	1 258.88	2.00	3 333.26	2.00
Business Services	977.14	8.00	225.96	9.00	1 122.17	6.00	2 325.28	8.00
Community, Social and Personal Services	1 007.09	6.00	554.32	6.00	1 204.78	4.00	2 766.19	6.00

(Source: Author's own calculations based on the South African SAM 2006)

The different effects, direct, indirect and induced, indicated in Table 5.1 above, will be discussed separately in the sections to follow. The multiplier analysis includes direct, indirect and induced effects which can be summarised as follows:

- If the mining industry can be used as an example, the direct impact would be the expenditures used to construct and operate a mine, such as labour, materials and capital.
- The indirect effects would then be the suppliers of the mine, expanding production and purchasing goods and services in order to meet the expanded demand.
- The induced effect is a result of the employees of the mine purchasing goods and services on a household level.

5.3.1.1 Direct effect of the Production Multiplier analysis

As illustrated by Table 5.1 the services sector with the highest total direct production multiplier effect throughout the total South African economy is Building and Construction. After Building and Construction, Real Estate exhibited the second

largest direct production multiplier effect. The third largest direct production multiplier effect throughout the South African economy was from Accommodation.

Firstly, by analysing the results illustrated in Annexure A, the results illustrated the production multiplier effects throughout the South African economy for Building and Construction stimulation. The most prominent direct production multiplier linkages were found within the services industry itself, thus from one services sector to other services sectors. This includes services sectors such as Building and Construction (R567.38 million) and Business Services (R105.66 million). The results also indicated the most prominent direct production multiplier linkages within the manufacturing industry including sectors such as Chemicals and Chemical Products (R72.34 million) and Non-Metallic Mineral Products (R58.01 million).

Secondly, analysis of the results from the Real Estate result table (see Annexure A) illustrated the direct production multiplier effects for Real Estate. The results indicated that the most prominent direct production multiplier linkages occurred within the services industry, including the Real Estate (R526.90 million) sector itself as well as, Finance and Insurance (R163.64 million), Business Services (R97.45 million) and Community, Social and Personal Services (R104.78 million). The results also indicated a prominent linkage within the manufacturing industry namely the Chemicals and Chemical Products (R48.21 million) sector.

Finally, the results in Annexures A, which illustrate the production multiplier results for Accommodation, were analysed. The most prominent linkages were found within the services industry which included Accommodation (R511.35 million) itself and Business Services (R227.75). The results also indicated prominent linkages within the manufacturing industry namely Beverages and Tobacco Products (R30.06 million) and Chemicals and Chemical Products (R40.82 million).

5.3.1.2 Indirect effect of the Production Multiplier analysis

As illustrated by Table 5.1 above, the services sector with the highest total indirect production multiplier effect throughout the total South African economy is Building and Construction, followed by Real Estate and then finally Communication sector.

When analysing the indirect production multiplier results from the Building and Construction table of results (see Annexure A), the results indicated the most

prominent indirect production multiplier effects were found within the services industry, namely Building and Construction (R689.53 million) and Trade (R31.89 million). The results also indicated prominent linkages within the manufacturing industry, namely, Chemicals and Chemical Products (R71 million), Non-Metallic Mineral Products (R49.21 million), Basic Metal Products (R39.13 million) and Structural Metal Products (R23.62 million).

The results for Real Estate (see Annexure A) were analysed to illustrate the results for the production multiplier stimulus for Real Estate. The most prominent indirect production multiplier linkages were found within the services industry within Real Estate (R515.03 million) itself as well as, Finance and Insurance (R68.41 million) and Community, Social and Personal Services (R52.51 million). The results also indicated prominent indirect production multiplier linkages within the manufacturing industry, namely, Chemicals and Chemical Products (R47.32 million).

Finally, the production multiplier results illustrated for a stimulus in the Communication sector was analysed. The results indicated the most prominent indirect production multiplier effects within the services industry, namely, Communication (R576.40 million), Accommodation (R28.88 million) and Transport (R35.27 million). The results also indicated prominent linkages within the manufacturing industry, namely, Chemicals and Chemical Products (R49.11 million) and Communication, Medical and Other Electronic Equipment (R30.12 million).

5.3.1.3 Induced effect of the Production Multiplier analysis

As illustrated by Table 5.1, the services sector with the highest total induced production multiplier effect throughout the total South African economy is Accommodation. After Accommodation, the results indicated Real Estate as the second largest induced production multiplier effect. Finally, the results indicated the third largest induced production multiplier effect throughout the South African economy as the Building and Construction sector.

Firstly, the results for the production multiplier of Accommodation were analysed (see Annexure A). The results indicated the most prominent linkages within the services industry, namely, Accommodation (R553.86 million), Electricity (R45.43 million), Business Services (R263.74 million) and Community, Social and Personal

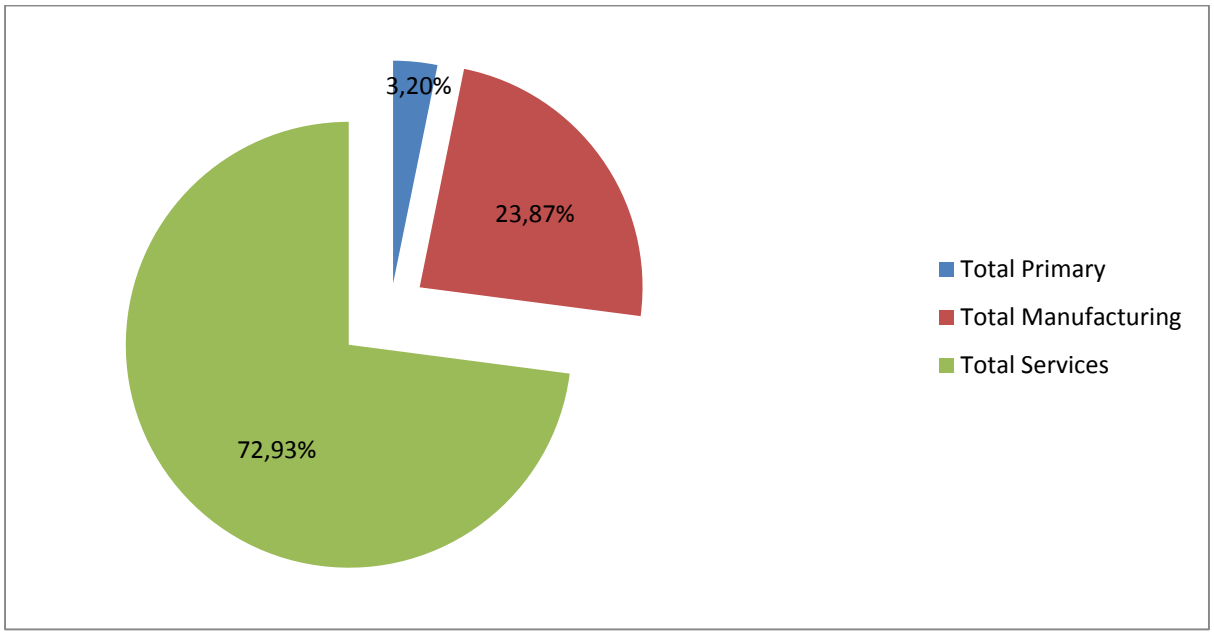
Services (R40.83 million). The results also indicated prominent linkages within the manufacturing industry, namely, Beverages and Tobacco Products (R32.28 million) and Chemicals and Chemical Products (R37.45 million).

Secondly, analysis of the results from Real Estate, which illustrates the results of the production multiplier for a stimulus in the Real Estate sector, indicated the most prominent induced production multiplier effect within the services industry, namely, Real Estate (R557.09 million), Finance and Insurance (R185.93 million), Business Services (R112.85 million) and Community, Social and Personal Services (R130.52 million). The results also indicated prominent linkages within the manufacturing industry, namely, Chemicals and Chemical Products (R44.23 million). Finally, analysis of results for Building and Construction (see Annexure A), which illustrates the results of the production multiplier stimulus in the Building and Construction sector, the most prominent linkages within the services industry were in Building and Construction (R572.86 million), Trade (R52.47 million) and Transport (R37.95 million). prominent linkages within the manufacturing industry namely Chemicals and Chemical Products (R66.37 million) and Non-Metallic Mineral Products (R60.84 million).

5.3.1.4 Combined Direct, indirect and induced effect of the Production Multiplier analysis

The combined total impact of the direct, indirect and induced production multiplier effect provides the sector with the greatest effect for direct, indirect and induced. As illustrated by Table 5.1, the services sector with the highest total production multiplier effect throughout the total South African economy is Building and Construction. This is followed by Real Estate with the second largest total production multiplier effect, and Accommodation with the third largest total production multiplier effect throughout the South African economy.

Figure 5.1 Total Production Multiplier spill-over effect throughout the primary, manufacturing and services industry for Building and Construction in Millions of Rand



The services sector with the highest combined production multiplier effect, which includes direct, indirect and induced effects, was for Building and Construction. As illustrated in Figure 5.1, the results indicated that the most prominent spill-over effects were found within the services industry (72.93%). With more than double the total production multipliers than the manufacturing industry (23.87%) and the primary industry (3.2%). Thus, this would indicate that a strong stimulus of a services sector could result in the stimulus of other services sectors within the industry. After analysing the results from Annexures A which includes the production multiplier effects for Building and Construction, the most prominent linkages in the services industry were found in Building and Construction (R1 829.77 million), Trade (R128.78 million), Transport (R105.19 million), Communication (R75.32 million), Business Services (R246 million) and Community, Social and Personal Services (R81 million).

Secondly, the results from Real Estate (see Annexure A), which illustrates the production multiplier effects for an increase in exports in the Real Estate sector, were analysed. This includes the most prominent total production multiplier linkages which includes direct, indirect and induced effects within the services industry. The results

indicated services sectors such as Real Estate (R1 599.02 million), Building and Construction (R126.86 million), Communication (R77.78 million), Finance and Insurance (R417.98 million), Business Services (R226.88 million) and Community, Social and Personal Services (287.82 million). This indicates that 86.79% of the total production multiplier linkages are within the services industry. A prominent total production multiplier linkage was found within the manufacturing industry, namely, Chemicals and Chemical Products (R139.77 million). The manufacturing industry only indicated 12.19% of the total production multiplier linkages including direct, indirect and induced effects. Furthermore, results indicated a small linkage within the primary industry, with only 1,02% of the total production multiplier effects.

Finally, the results from Accommodation (see Annexure A), which illustrate the production multiplier effects an increase in exports in the Accommodation sector, were analysed. The most prominent total production multiplier effects within the services industry include sectors such as Accommodation (R1 567.39 million), Electricity (R117.23 million), Transport (R71.94 million), Communication (R82.37 million), Finance and Insurance (R86.61 million), Business Services (R530.25 million) and Community, Social and Personal Services (R90.03 million). This includes direct, indirect and induced effects, which indicated an 80.83% of the linkages were within the services industry. The results also indicated prominent production multiplier linkages within the manufacturing industry which includes sectors such as Beverages and Tobacco products (R85.81 million) and Chemicals and Chemical Products (R118.35 million). The manufacturing industry only indicated 16.89% of the total production multiplier linkages, which includes direct, indirect and induced effects. The results indicated that the primary industry only indicated 2.28% of the total production multiplier linkages.

From the above analysis, it is clear that when exports are increased, the services sectors with the highest total direct production multiplier effect throughout the total South African economy are Building and Construction, Real Estate and Accommodation. Furthermore, the services sectors with the highest total indirect production multiplier effect throughout the total South African economy are the Building and Construction, Real Estate and the Communication sector. Finally, the services sectors with the highest total induced production multiplier effect throughout

the total South African economy are the Accommodation, Real Estate and Building and Construction sectors.

5.3.2 Analysis for the GDP multiplier

The results in this section are illustrated in millions of South African Rand, and are summarised as indirect, direct and induced GDP multiplier results for each sector, as defined by the SAM model. This section will specifically focus on the results for the GDP multiplier (see Section 4.4.2.2) after the shock applied to each services sector as defined by the SAM model (see Section 4.2.4).

Table 5.2 illustrates the total GDP multiplier effect that a R1 billion increase in exports for each services sector has throughout the South African economy in terms of the direct, indirect and induced multiplier effects. This thus gives an indication of which sectors have the highest total GDP effect throughout the economy and the inter-linkages with other sectors.

Table 5.2 Total effect for the GDP multiplier for each services sector in Millions of Rand

Activities	Direct	Rank	Indirect	Rank	Induced	Rank	Direct + Indirect + Induced	Rank
Building and Construction	424.24	8.00	495.15	1.00	613.19	3.00	1 532.58	3.00
Trade	315.08	9.00	191.84	8.00	325.13	9.00	832.05	9.00
Accommodation	528.95	5.00	459.98	3.00	630.69	1.00	1 619.63	2.00
Transport	465.07	6.00	370.04	5.00	541.70	8.00	1 376.81	8.00
Communication	463.55	7.00	402.18	4.00	560.39	6.00	1 426.11	7.00
Finance and Insurance	666.63	2.00	243.54	7.00	556.53	7.00	1 466.70	6.00
Real Estate	531.35	4.00	465.33	2.00	628.16	2.00	1 624.85	1.00
Business Services	821.00	1.00	113.51	9.00	560.46	5.00	1 494.97	4.00
Community, Social and Personal Services	605.10	3.00	277.03	6.00	601.46	4.00	1 483.59	5.00

(Source: Author's own calculations based on the South African SAM 2006)

As illustrated by Table 5.2, the services sector with the highest total direct GDP multiplier effect throughout the total South African economy is Business Services. The results indicated the second largest direct GDP multiplier effect to be Finance and Insurance. Finally, the results indicated the third largest direct GDP multiplier

effect throughout the South African economy to be the Community, Social and Personal Services sector. The different effects, direct, indirect and induced, indicated in table 5.2 above, will be discussed separately in the sections to follow.

5.3.2.1 Direct effect of the GDP Multiplier analysis

The results from Business Services (see Annexure B) which illustrates the GDP multiplier effects for a stimulus in the Business Services sector were analysed. The most prominent direct GDP multiplier linkage within the services industry was Business Services (R778.62 million). Business Services indicated a low GDP spill-over effect throughout the manufacturing and primary industry.

Secondly, analysis of the results for Finance and Insurance (see Annexure B), which illustrates the results for a stimulus in the Finance and Insurance sector, indicated that the most prominent direct GDP multiplier linkages within the services industry were in Finance and Insurance (R535.19 million) itself, Real Estate (R12.58 million), Business Services (R46.57 million) and Community, Social and Personal Services (R40.86 million). Again, the direct GDP multiplier spill-over effect was limited and did not show prominence within the manufacturing and primary industries.

Finally, the results for Community, Social and Personal Services (see Annexure B), which illustrate the GDP multiplier effects for a stimulus in the Community, Social and Personal Services sector, indicated the most prominent direct GDP multiplier effects within the services industry, namely, Community, Social and Personal Services (R501.79 million) itself and Business Services (R45.20 million). Again, the results indicated small prominence in terms of the manufacturing and primary industry.

5.3.2.2 Indirect effect of the GDP Multiplier analysis

As illustrated by Table 5.2, the services sector with the highest total indirect GDP multiplier effect throughout the total South African economy is Building and Construction. The second largest indirect GDP multiplier effect was found within the Real Estate sector. Finally, the results indicated the third largest indirect GDP multiplier effect throughout the South African economy to be the Accommodation sector.

Firstly, the results from Building and Construction (see Annexure B), which illustrate the GDP multiplier effects for a stimulus in the Building and Construction sector, were analysed. The results indicated the most prominent indirect GDP multiplier linkages within the services industry, namely, Building and Construction (R282.01 million) and Trade (R16 Million). The results indicated prominent indirect GDP multiplier linkages within the manufacturing industry, in sectors such as Chemical and Chemical Products (R30.94 million), Non-Metallic Mineral Products (R22.50 Million) and Basic Metal Products (R17 million). The results also indicated a prominent indirect GDP multiplier linkage within the primary industry, namely, Other Mining (R11.04).

Secondly, analysis of the results from Real Estate (see Annexure B), which illustrate the GDP multiplier effects for a stimulus in the Real Estate sector, indicated that the most prominent indirect GDP multiplier linkages within the services industry are in Real Estate (R280.81 million), Building and Construction (R19.55 million), Finance and Insurance (R36.62 million) and Community, Social and Personal Services (R27.58 million). The results also indicated a prominent indirect GDP multiplier linkage within the manufacturing industry, namely, Chemicals and Chemical Products (R20.62 million).

Finally, after analysing the results for Accommodation (see Annexure B), which illustrates the GDP multiplier effects for a stimulus in the Accommodation sector, the results indicated the most prominent indirect GDP multiplier linkages within the services industry, including sectors such as Accommodation (R276.64 million), Electricity (R15.02 million) and Business Services (R20.35 million). The results also indicated prominent indirect GDP multiplier linkages within the manufacturing industry, namely, Beverages and Tobacco Products (R11.40 million) and Chemicals and Chemical Products (R17.46 million).

5.3.2.3 Induced effect of the GDP Multiplier analysis

As illustrated by Table 5.2, the services sector with the highest total induced GDP multiplier effect throughout the South African economy is Accommodation. The second largest induced GDP multiplier effect was found within the Real Estate sector. Finally, the third largest induced GDP multiplier effect was within the Building and Construction sector.

Firstly, the results from Accommodation (see Annexure B), which illustrate the GDP multiplier effects for a stimulus in the Accommodation sector, were analysed. The results indicated that the most prominent induced GDP multiplier effects were within the services industry, namely, Accommodation (R276.03 million) itself as well as other services sectors including, Electricity (R22.62 million), Finance and Insurance (R19.24 million), Business Services (R131.75 million) and Community, Social and Personal Services (R20.39 million). The results indicated the most prominent induced GDP multiplier linkages within the manufacturing industry as Beverages and Tobacco Products (R16.08 million) and Chemicals and Chemical Products (R18.65 million).

Secondly, analysis of the results from Real Estate (see Annexure B), which illustrate the GDP multiplier effects for a stimulus in the Real Estate sector indicated the most prominent induced GDP multiplier linkages within the services industry, namely, Real Estate (R278.09 million), Building and Construction (R19.75 million), Finance and Insurance (R92.87 million), Business Services (R56.37 million) and Community, Social and Personal Services (R65.18 million). A prominent induced GDP multiplier linkage was also found within the manufacturing industry namely Chemical and Chemical Products (R22.02 million).

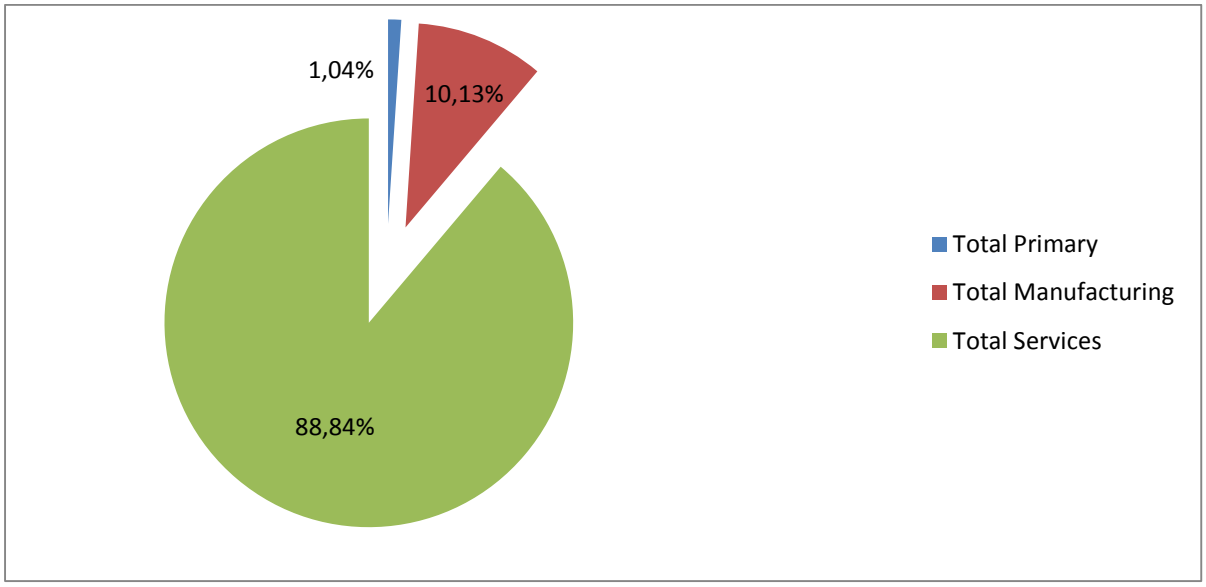
Finally, analysis of the results from Building and Construction (see Annexure B) which illustrate the GDP multiplier effects for a stimulus in the Building and Construction sector, indicated the most prominent induced GDP multiplier linkages within the services industry, including sectors such as Building and Construction (R284.85 million), Trade (R26.13 million), Transport (R18.90 million), Business Services (R61.12 million) and Community, Social and Personal Services (R18.34 million). The results also indicated prominent induced GDP multiplier linkages within the manufacturing industry, namely, Chemicals and Chemical Products (R33.04 million), Non-Metallic Mineral Products (R30.30 million) and Basic Metal Products (R15.52 million).

5.3.2.4 Combined Direct, indirect and induced effect of the GDP Multiplier analysis

This section describes the combined total impact of the direct, indirect and induced GDP multiplier effect. As illustrated by Table 5.2, the services sector with the highest total GDP multiplier effect throughout the total South African economy is Real Estate.

After Real Estate, the second largest total GDP multiplier effect was Accommodation. Finally, the results indicated the third largest total GDP multiplier effect throughout the South African economy to be the Building and Construction sector.

Figure 5.2 Total GDP Multiplier spill-over effect throughout the primary, manufacturing and services industry for Real Estate in Millions of Rand



The results indicated that the services sector with the highest combined GDP multiplier effect, including direct, indirect and induced effects, was Real Estate. The most prominent spill-over effects were within the services industry (88.84%). This is eight times larger than the manufacturing industry (10.13%) and the primary industry (1.04%) combined. Furthermore, the results from Real Estate (see Annexure B), which illustrate the GDP multiplier effects for a stimulus in the Real Estate sector, indicate the most prominent total GDP multiplier effects within the services industry, including sectors such as Real Estate (R727.08 million), Finance and Insurance (R247.42 million), Business Services (R151.23 million) and Community, Social and Personal Services (R159.34 million).

Secondly, analysis of the results for Accommodation (see Annexure B) which illustrate the GDP multiplier effects for a stimulus in the Accommodation sector, indicates the most prominent total GDP multiplier linkages within the services industry, including sectors such as Accommodation (R702.22 million) and Business

Services (R353.45 million). Furthermore, a small total GDP multiplier linkages were found within the manufacturing (14.38%) and primary industry (2.29%).

Finally, analysis of the results for Building and Construction (see Annexures B), which illustrate the GDP multiplier effects for a stimulus in the Building and Construction sector, indicate the most prominent total GDP multiplier linkages within the services industry, namely Building and Construction (R695.26 million), Trade (R65.42 million) and Business Services (R163.97 million). Thus, the services industry accounted for 73.64% of total GDP multiplier linkages. Furthermore, Building and Construction indicated higher GDP multiplier linkages within the manufacturing sector (22.74%), than Real Estate (10.13%) and Accommodation (14.38%). This includes linkages with sectors such as Chemicals and Chemical Products (R82.43 million) and Non-Metallic Mineral Products (R76.11 million). The primary industry only indicated 3.62% of the total GDP multiplier share, significantly lower than the services and manufacturing industry.

The above analysis clearly demonstrates that the services sectors with the highest total direct GDP multiplier effect throughout the total South African economy are the Business Services, Finance and Insurance and Community, Social and Personal Services sectors. Furthermore, the services sectors with the highest total indirect GDP multiplier effect throughout the total South African economy are the Building and Construction, Real Estate and the Accommodation sectors. Finally, the services sectors with the highest total induced GDP multiplier effect throughout the South African economy are the Accommodation, Real Estate and Building and Construction sectors.

5.3.3 Analysis for the Labour Multiplier

The results in this section are illustrated in units of labour, which are summarised as indirect, direct and induced labour multiplier results for each sector, as defined by the SAM model. This section will specifically focus on the results for the labour multiplier (see Section 4.4.2.3) after the shock applied to each service sector, as defined by the SAM model (see Section 4.2.4).

Table 5.3 illustrates the total labour multiplier effect that a R1 billion increase in each services sector has throughout the South African economy in terms of the direct,

indirect and induced multiplier effects. This gives an indication of which sectors have the highest total labour effect throughout the economy and the inter-linkages with other sectors.

Table 5.3 Total effect for the labour multiplier for each services sector per unit of jobs created

Activities	Direct	Rank	Indirect	Rank	Induced	Rank	Direct + Indirect + Induced	Rank
Building and Construction	3 893.99	4.00	3 694.59	1.00	4 512.86	3.00	12 101.44	4.00
Trade	2 393.73	8.00	1 386.64	8.00	2 387.85	9.00	6 168.23	9.00
Accommodation	6 261.00	3.00	3 663.37	2.00	4 630.86	1.00	14 555.23	2.00
Transport	2 814.41	6.00	2 699.42	4.00	3 981.60	8.00	9 495.42	6.00
Communication	1 952.80	9.00	2 621.21	5.00	4 120.19	5.00	8 694.20	7.00
Finance and Insurance	2 583.18	7.00	1 939.93	7.00	4 076.18	7.00	8 599.29	8.00
Real Estate	2 824.88	5.00	3 437.67	3.00	4 607.63	2.00	10 870.18	5.00
Business Services	8 973.44	1.00	915.64	9.00	4 102.06	6.00	13 991.13	3.00
Community, Social and Personal Services	7 942.30	2.00	2 612.29	6.00	4 419.99	4.00	14 974.58	1.00

(Source: Author's own calculations based on the South African SAM 2006)

As illustrated in Table 5.3, the services sector with the highest total direct Labour multiplier effect throughout the South African economy is Business Services. The second largest direct labour multiplier effect was found within the Community, Social and Personal Services sector. Finally, the third largest direct labour multiplier effect throughout the South African economy was within the Accommodation sector. The different effects, direct, indirect and induced, indicated in Table 5.3 above, will be discussed separately in the sections to follow.

5.3.3.1 Direct effect of the Labour Multiplier analysis

Analysis of the results from Business Services (see Annexure C), which illustrate the labour multiplier effects for a stimulus in the Business Services sector, indicates the most prominent direct labour multiplier linkages within the services industry, namely Business Services (8 664 jobs) and Community, Social and Personal Services (176 jobs). The results indicate significantly smaller direct labour multiplier effects throughout the manufacturing and primary industry.

Secondly, the results from Community, Social and Personal Services (see Annexure C), which illustrate the labour multiplier effects for a stimulus in the Community, Social and Personal Services sector, were analysed. The results indicate the most prominent direct labour multiplier linkages within the services industry, namely Community, Social and Personal Services (7 7942 jobs) and Business Services (503 jobs). The results also indicate some direct labour multiplier linkages within the manufacturing industry including sectors such as Textiles, Clothing, Leather Products and Footwear (18 jobs) and Chemicals and Chemical Products (19 jobs).

Finally, analysis of the results from Accommodation (see Annexure C), which illustrate the labour multiplier effects for a stimulus in this sector, indicates the most prominent direct labour multiplier linkages within the services industry, including sectors such as Accommodation (3 049 jobs), Business Services (2 240.47 jobs) and Community, Social and Personal Services (298 jobs). The results also indicate prominent direct labour multiplier linkages within the manufacturing industry, namely, Beverages and Tobacco Products (48 jobs) and Chemicals and Chemical Products (28 jobs). The results also indicate prominent direct labour multiplier linkages within the primary industry including sectors such as Poultry Farming (36 jobs) and Other Agriculture (29 jobs).

5.3.3.2 Indirect effect of the Labour Multiplier analysis

As illustrated by Table 5.3, the services sector with the highest total indirect Labour multiplier effect throughout the South African economy is Building and Construction. The second largest indirect labour multiplier effect was found within the Accommodation sector. Finally, the third largest indirect labour multiplier effect was found within the Real Estate sector.

Firstly, analysis of the results from Building and Construction (see Annexure C), which illustrate the labour multiplier effects for a stimulus in the Building and Construction sector, indicates the most prominent indirect labour multiplier effects within the services industry, including sectors such as Building and Construction (2 196 jobs), Trade (114 Jobs), Transport (100 jobs), Communication (61 jobs), Business Services (78 jobs) and Community, Social and Personal Services (79 jobs). The results also indicate prominent indirect labour multiplier linkages within the manufacturing industry, namely, Chemicals and Chemical Products (199 jobs), Non-

Metallic Mineral Products (159 jobs), Basic Metal Products (94 jobs), Machinery and Equipment (66 jobs) and Electrical Machinery and Apparatus (72 jobs). The results also indicate a prominent indirect labour multiplier linkage within the primary sector, namely, Other Mining (71 jobs). Secondly, analysis of the results from Accommodation (see Annexure C), which illustrate the labour multiplier effects for a stimulus in the Accommodation sector, indicates the most prominent linkages within the services industry, namely, Accommodation (2 276 jobs), Electricity (82 jobs), Trade (52 jobs), Transport (68 jobs), Communication (66 jobs), Finance and Insurance (61 jobs), Business Services (169 jobs) and Community, Social and Personal Services (88 jobs). The results also indicate prominent linkages within the manufacturing industry, including sectors such as Dairy Products (69 jobs), Beverages and Tobacco Products (99 jobs) and Chemicals and Chemical Products (112 jobs). Finally, analysis of the results for Real Estate (see Annexure C) which illustrate the labour multiplier effects for a stimulus in the Real Estate sector, indicates the most prominent indirect labour multiplier linkages within the services industry, which includes sectors such as Real Estate (2 006 jobs), Building and Construction (152 jobs), Communication (63 jobs), Finance and Insurance (294 jobs), Business Services (72 jobs) and Community, Social and Personal Services (282 jobs). The results also indicate a prominent indirect labour multiplier linkage within the manufacturing industry, namely, Chemicals and Chemical Products (132 jobs).

5.3.3.3 Induced effect of the Labour Multiplier analysis

As illustrated in Table 5.3, the services sector with the highest total induced labour multiplier effect throughout the South African economy is Accommodation. The second largest induced labour multiplier effect was found within the Real Estate sector. Finally, the third largest induced labour multiplier effect throughout the South African economy was found within the Building and Construction sector.

Firstly, analysis of the results for Accommodation (see Annexure C), which illustrates the labour multiplier effects for a stimulus in the Accommodation sector, indicates the most prominent induced labour multiplier linkages within the services industry, including sectors such as Accommodation (2 028 jobs), Electricity (166 jobs), Trade (89 jobs), Transport (95 jobs), Communication (108 jobs), Finance and Insurance

(141 jobs), Business Services (964 jobs) and Community, Social and Personal Services (150 jobs). The results also indicate prominent induced labour multiplier linkages within the manufacturing industry, including sectors such as Beverages and Tobacco Products (118 jobs) and Chemicals and Chemical Products (137 jobs).

Secondly, analysis of the results for Real Estate (see Annexure C), which illustrates the labour multiplier effects for a stimulus in the Real Estate sector, indicates the most prominent induced labour multiplier linkages within the services industry, namely, Real Estate (2 038 jobs), Building and Construction (146 jobs), Trade (73 jobs), Transport (71 jobs), Communication (102 jobs), Finance and Insurance (680 jobs), Business Services (412 jobs) and Community, Social and Personal Services (479 jobs). The results also indicate prominent induced labour multiplier linkages within the manufacturing industry, namely, Furniture (61 jobs) and Chemicals and Chemical Products (162 jobs).

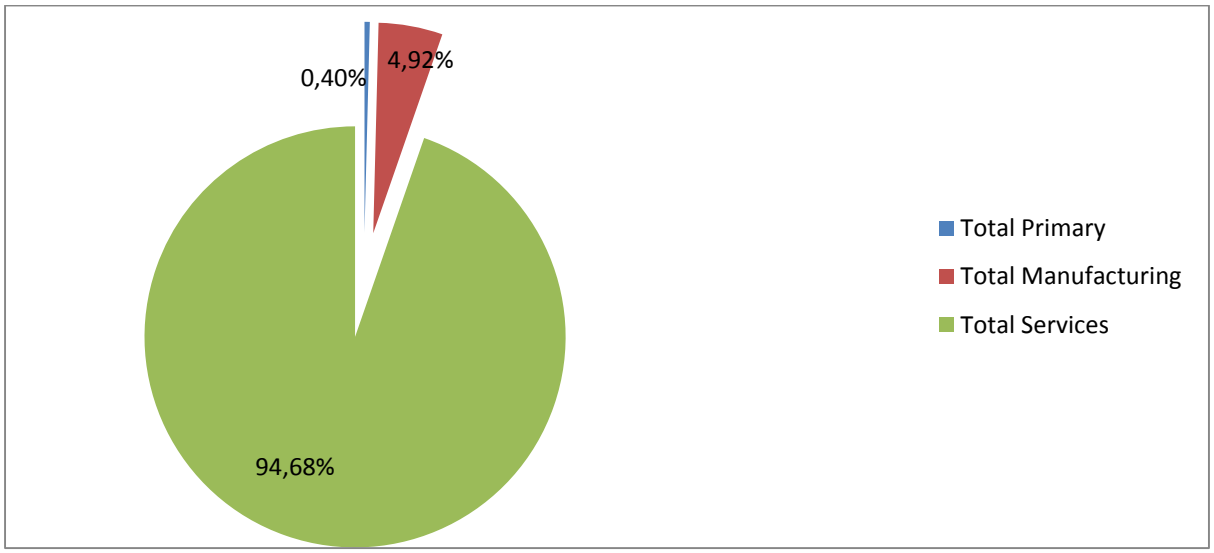
Finally, the results for Building and Construction (see Annexure C), which illustrate labour multiplier effects for a stimulus in the Building and Construction sector, were analysed. The results indicate the most prominent induced labour multiplier linkages within the services industry, namely, Building and Construction (2 100 jobs), Trade (192 jobs), Transport (139 jobs), Communication (99 jobs), Finance and Insurance (91 jobs), Business Services (447 jobs) and Community, Social and Personal Services (135 jobs). The results indicate prominent induced labour multiplier linkages within the manufacturing industry, including sectors such as Chemicals and Chemical Products (243 jobs), Non-Metallic Mineral Products (223 jobs), Basic Metal Products (114 jobs), Structural Metal Products (83 jobs), Machinery and Equipment (73 jobs) and Electrical Machinery and Apparatus (85 jobs). Furthermore, the results also indicate a prominent induced labour multiplier effect within the primary industry, namely, Other Mining (125 jobs).

5.3.3.4 Combined Direct, indirect and induced effect of the Labour Multiplier analysis

This section will illustrate the combined total impact of the direct, indirect and induced labour multiplier effect. As illustrated in Table 5.3, the services sector with the highest total direct labour multiplier effect throughout the South African economy is Community, Social and Personal Services. The second largest direct labour multiplier effect was found within the Accommodation sector. Finally, the third largest

direct labour multiplier effect throughout the South African economy was found within the Business Services sector.

Figure 5.3 Total GDP multiplier spill-over effect throughout the primary, manufacturing and services industry Community, Social and Personal Services in Millions of Rand



The services sector with the highest combined labour multiplier effect, including direct, indirect and induced effects, were Community, Social and Personal Services. The most prominent spill-over effects occurred in the services industry (94.68%). In contrast, the manufacturing industry (4.92%) and primary industry (0.4%) only had a combined labour multiplier spill-over effect of 5.32%.

Firstly, analysis of the results for Community, Social and Personal Services (see Annexure C), which illustrate the labour multiplier effects for a stimulus in the Community, Social and Personal Services sector, indicated that the most prominent linkages within the services industry were Community, Social and Personal Services (12 916 jobs), Trade (86 jobs), Transport (104 jobs), Communication (94 jobs), Business Services (757 jobs). Furthermore, prominent linkages were found within the manufacturing industry, in Furniture (79 jobs), Chemicals and Chemical Products (185 jobs) and Manufacturing of Transport Equipment (94 jobs).

Secondly, analysis of the results from Accommodation (see Annexure C), which illustrate the labour multiplier effects for a stimulus in the Accommodation sector, indicates the most prominent total labour multiplier effects within the services

industry, including sectors such as Accommodation (7 353 jobs), Electricity (290 jobs), Building and Construction (121 jobs), Trade (220 jobs), Transport (206 jobs), Communication (196 jobs), Finance and Insurance (262 jobs), Real Estate (100 jobs), Business Services (3 373 jobs) and Community, Social and Personal Services (536 jobs). This represents 87.07% of the total labour multiplier spill-over effects throughout the analysis. The results also indicate prominent total labour multiplier linkages within the manufacturing industry, including sectors such as Dairy Products (131 jobs), Grain Mill, Bakery and Animal Feed Products (103 jobs), Other Food Products (101 jobs), Beverages and Tobacco Products (264 jobs), Furniture (103 jobs) and Chemicals and Chemical Products (277 jobs). The manufacturing industry (10.81%) and primary industry (2.12%) shared less than 13% of the total labour multiplier effects.

Finally, analysis of the results from Business Services (see Annexure C), which illustrate the labour multiplier effects for a stimulus in the Business Services sector, indicates the most prominent total labour multiplier linkages within the services industry, namely, Business Services (13 045 jobs), Transport (73 jobs) and Community, Social and Personal Services (316 jobs). Furthermore, small total labour multiplier linkages were found within the manufacturing industry (1.93%) and primary industry (0.23%), compared to the services industry (97.84%).

From the above analysis, it is clear that the services sectors with the highest total direct labour multiplier effect throughout the South African economy are the Business Services, Community, Social and Personal Services and the Accommodation sectors.

5.4 Conclusion

After reviewing the relevant literature regarding tradable and exportable services sectors, the following SAM services sectors were identified as tradable/exportable and thus they were used within the analysis of this study: Building and Construction; Trade; Accommodation; Communication; Finance and Insurance; Real Estate; Business Services; and Community, Social and Personal Services.

The analysis indicated that the services sectors with the highest total direct production multiplier effects throughout the total South African economy are

Accommodation, Real Estate and Building and Construction. Furthermore, the services sectors with the highest total indirect production multiplier effects throughout the total South African economy are Building and Construction, Real Estate and the Communication sector. Finally, the services sectors with the highest total induced production multiplier effects throughout the total South African economy are Accommodation, Real Estate as well as the Building and Construction sector.

In terms of the GDP multiplier analysis, the services sectors with the highest total direct GDP multiplier effects throughout the total South African economy are the Business Services, Finance and Insurance and Community, Social and Personal Services sectors. Furthermore, the services sectors with the highest total indirect GDP multiplier effects throughout the total South African economy are the Building and Construction, Real Estate and the Accommodation sectors. Finally, the services sectors with the highest total induced GDP multiplier effects throughout the South African economy are the Accommodation, Real Estate and Building and Construction sectors.

In terms of the labour multiplier analysis, the service sectors with the highest total direct labour multiplier effects throughout the South African economy are the Business Services, Community, Social and Personal Services and Accommodation sectors. Furthermore, the services sectors with the highest total indirect labour multiplier effects throughout the South African economy are the Building and Construction, Accommodation and Real Estate sectors. Finally, the services sectors with the highest total induced labour multiplier effects throughout the South African economy are the Accommodation, Real Estate and Building and Construction sectors.

The aim of this study was to determine the most employment-intensive services sectors and their linkages with other sectors within the South African economy, in order to make recommendations for policy makers towards sustainable economic growth and job creation in the services sector. To this end, it was found that an increase in the exports of services in South Africa has a definite impact on employment in the following sectors:

- Production
    - Building and Construction, Real Estate and Accommodation
- GDP
    - Real Estate, Accommodation, and Building and Construction
- Labour
    - Community, Social and Personal Services, Accommodation, and Business Services

Thus these results can contribute greatly to policy decisions on provincial and national level. The following chapter will discuss the conclusions made for the study, as well as recommendations.

Chapter 6: Conclusion and Recommendations

6.1 Introduction

In the previous chapter the SAM model was applied, in terms of the production, GDP and labour multipliers. The goal of the Social Accounting Matrix analysis is to measure the overall effect that the expansion of one sector can have on all the other sectors combined, through production multipliers, GDP multipliers and labour multipliers. This model was applied in this study with a specific focus on the impact of the services sectors in the South African economy, and more specifically what an increase in the exports of services would mean for the economy. The first step in the empirical analysis was to identify exportable services sectors. Thereafter, the empirical results for the services industry, regarding the production multiplier, GDP multiplier and the labour multipliers, were discussed.

The study will be summarised in Section 6.2. Thereafter, relevant policy recommendations will be made in Section 6.3, based on the results from the empirical analysis. Finally, in Section 6.4, future research will be discussed.

6.2 Summary

The objective of this study was to determine the most employment-intensive services sectors and their linkages within the South African economy, in order to determine recommendations for policy makers towards sustainable economic growth and job creation. This, together with the identification of linkages in other sectors, can support more focused policy making. To this effect, a literature study was done within the first part of the study.

Chapter 2 provided the theoretical background for the study, which includes why countries trade, the relationship between export expansion and employment creation, as well as the forward and backward linkages in economies. The objective of Section 2.2 was to motivate theoretically the reasons for international trade and discuss the economic benefits thereof. Some countries have the population (labour) to support large industrial complexes, others do not. Other countries are home to a large pool of workers (labour) with the ability to run modern machinery, other have scientists and engineers specialising in research-laden products. Other countries have the specific skill of entrepreneurs whom are more capable and knowledgeable

than others (Francois & Hoekman, 2010). Firstly, products need specific productive factors in different relative proportions. For example, producing agricultural goods requires relatively more labour per capital than manufactured goods, which require more capital per worker than most primary goods. Thus, the factor endowment theory assumes that some products are more capital intensive than others produced in the economy. Secondly, countries have different factors of endowment. For example, a developed country like the United States has large amounts of capital per unit of labour, and is thus defined as a capital-abundant country. Other countries, like Egypt, India and Colombia, have less capital and more units of labour, defining them as labour-abundant countries. Thus, in general, developed countries are more capital-abundant and developing countries are more labour-abundant in their individual economies (Todaro & Smith, 2011).

It is nearly impossible for an individual or a country to be completely self-sustaining in its demand of the simplest lifestyle (Todaro & Smith, 2011). Thus it would be more profitable to engage in the specific activities to which they are most suited or in which they have a *comparative advantage* in terms of their natural abilities (skills) or resource endowment. This creates the ability to trade in the specific product or service that the individual or country is the most effective in producing. Thus specialization is created based on when comparative advantage arises, even in the most primitive economies. When countries specialize in production and export of specific goods and services, they have a comparative advantage over other countries.

Firstly, the studies found that the expansion of trade into a global market may not have the traditionally expected benefits, but rather can create countries that benefit and other countries that may not. Secondly, the studies further argue the emphasis of spill-over of production methods between countries and the transfer of technology. Thirdly, the studies linked the increasing returns to scale to Post Keynesian economics, which emphasises the effects of increasing returns to scale in international trade. Gomory and Baumol (2000) also linked the level of productivity to market size, which states that an increase in market size will have the effect of higher productivity. Fourthly, the studies argue for strategic trade policy in order to create greater returns from international trade. Finally, the studies analysed microeconomic theory, which is the basis of conventional trade theory. Thus, their

analysis is done on conventional trade theory's terms and strengthens the results on the effects of trade deficits on investment and employment (Thomas, 2008).

Section 2.4 discussed the relationship between export expansion and employment creation, firstly on a macro-level, and thereafter on a micro-level. The benefits of exports can be summarised as "gains from trade", which includes higher competitiveness, knowledge transfer and allocative efficiency (Harcourt, 2000). On the macro-level, the study's analyses predominantly indicated that the expansion of goods and services exports has a positive effect on economic growth and employment. In traditional neo-classical trade theory, the gains from international trade are the source of economic growth, which is maximized through adjustment. This is achieved through the means of economic liberalisation of the uneven factor and resource reallocation maintained through import substitution and export expansion.

When a firm meets a specific output for a specific price of demand, it may produce a different amount of output and employ a different amount of employees. Then the question arises of what amount of labour will be effective for the production of the specific firm (Andrew, et al., 2008). This is indicated in the Figure 2.1. The *effective labour demand curve* indicates what amount of labour is needed for a specific amount of output, with productivity, capital stock and effort held in a constant (Andrew, et al., 2008). In this study they were unable to find any empirical support for the theoretical link for the impact of trade on labour markets, but in most cases the hypothesis of a positive relationship between trade openness and demand elasticity could not be ignored.

In Section 2.5, the forward and backward linkages within specific economies were discussed. This section included the results of studies and reports given the inter-linkages which specific services sectors have with other sectors within the economy. One of the most prominent dimensions of interconnectedness of industries is the nature of buyers and suppliers linkage. From all the studies discussed on a micro level, one can conclude that services are playing a prominent role in the value adding process for the manufacturing industry, and these services sectors are also prominently linked within the economy. Furthermore, the above macro- and micro-

studies found prominent linkages between export expansion and an increase in employment levels, as well as economic growth.

The objective of Chapter 3 was to address the ongoing problem of unemployment in South Africa, as well as the government's plans to create jobs through economic policy and export expansion. The influence of the services industry and its exports on the South African economy were also discussed. Unemployment remains a great problem in South Africa, but the services sector has been growing in recent years and could provide a possible means of creating more jobs. In Section 3.2 the relevant data was analysed to establish the role of the services industry in South Africa. In 2013, the most prominent value adder for South African GDP was the services industry (R2 327 795 million), with 77% of the value added portion (Figure 3.2). The largest contributors to economic growth in 2013 were: Finance, Real Estate and Business Services (2.4% growth); Wholesale, Retail and Motor Trade (2.2% growth); Mining and Quarrying (3.1% growth) and finally Transport, Storage and Communication (1.9% growth) as well as General Government Services (1.5% growth).

The exports of services have grown consistently since 2004, with a minor decline occurring between 2008 and 2009. After 2009, services exports started increasing again, with low volatility and a minor decrease in 2013 (see Figure 3.5). The largest exporter within the services industry is the travel sector, with substantial exports which peaked at 9 billion dollars. Analysis of the remaining services sectors within the South African economy indicates that there can be a greater deal of growth in exports, with the majority of services sectors exporting less than 1 billion dollars.

The South African unemployment rate of 25% has indicated to be a problem for policy makers. Even though the South African economy has seen some upside in economic growth since the 2009 recession, the growth rate has failed to absorb the growing South African labour force. South Africa has seen its labour force grow by approximately 500 000 to 700 000 job seekers annually, as reported by Statistics South Africa, whereas the economy has only been able to create about 460 000 jobs annually.

The Industrial Policy Action Plan (IPAP) is framed by and constituted as a key pillar of the programmatic perspective set out in the NGP (see Section 3.3.3). Reality is

constantly changing, therefore the programme set in IPAP 2014 reflects the constant readjustment and response to shifting opportunities and demands, which is needed to keep this mandate alive. The main goal of IPAP is to use the set of solutions for major fault-lines in South Africa's economic structure, to create a policy shift emphasis towards the productive sectors of the economy. The IPAP document's most prominent focus is towards the manufacturing industry, because of specific reasons. The document states that these reasons include the fact that the manufacturing industry has the highest employment and economic multipliers. They also motivate that the manufacturing industry has high backward linkages toward the primary industry, services industry and the entire value chain.

The NEDP specifically focuses on small micro and medium enterprises, drawn from previously disadvantaged individuals, as well as the larger potential and established exporters. The NEDP is in line with the South African policy environment, which includes the NGP (see Section 3.3.3) and takes into account the global environment. The NEDP supplies support services such as a national information network including and export call centre, integrated export website, different levels of training, mentoring arrangements and assisting with export promotion (Gouws & Moore, 2013).

The National Development Plan (NDP) is South Africa's long term vision of an equitable society. The NDP aims to reduce inequality and eliminate poverty by 2030. The NDP also states that in order to create economic transformation, the rate of economic growth must surpass 5% per annum. There is a growing consensus that inequality must be reduced, poverty must be eliminated and there is a need to create decent jobs, which can be done through a new growth path founded on the restructuring of the South African economy. This will create more effective labour absorption and improvements in performance through higher economic growth, which is in line with the vision of the NDP (National Planning Commission, 2013). The basic objectives of the NGP are: a comprehensive drive to enhance both social equity and competitiveness; systemic changes to mobilise domestic investment around activities that can create sustainable employment; and strong social dialogue to focus all stakeholders on encouraging growth in employment-creating activities.

The highest percentage of total employment has remained within the services industry since 2004, at a rate above 60%. This is double the combined employment within agriculture and industry, with agriculture at 5% and industry at 25% of total employment. It was concluded that there could be a negative correlation between agricultural export expansion and low skilled employment (Section 3.4) (Mbatha, 2011). The most prominent conclusion made was that India and South Africa experience substantial employment declines as trade contracts (Kucera, et al., 2012). Furthermore, if substantial improvements were made to economic policies, specifically the promotion of trade in services, unemployment could be reduced by 20%.

The objective of Chapter 4 was to describe the methodology that was used for the SAM multiplier analysis, followed by a description of the development of the labour multiplier for the empirical analysis of the services industry. Section 4.2 provided an overview of the Social Accounting Matrix (SAM) multiplier model and more specifically the explanations regarding the employment side of the model. A SAM contains information about the flow of resources associated with all transactions in a specific period of time in between specific economic agents (Provide, 2003). The objective of the SAM model is, firstly, to organise the data when agents are involved in transactions with one other and when financial resources exchange hands. SAM reveals links between economic accounts, by integrating all kinds of economic flows (see Figure 4.1). The SAM model indicates in a quantitative manner the interdependence of all agents and economic activities over a specific time in a specific economic area.

The SAM can be separated into either a macro-SAM or a micro-SAM. A macro-SAM will provide the main macroeconomic characteristics of the economy, and will set the basic data framework for the further development of a micro-SAM (Wobst, 1998). In the macro-SAM, each activity will produce one or more commodity using factor services and intermediates, as well as the factor services produced by capital, labour, land and other natural resources. A Micro-SAM partitions certain accounts into more detailed classifications.

Section 4.3 discussed the SAM multiplier decompositions. In Table 4.1 the simplified Social Accounting Matrix (SAM) is illustrated. As stated above, it is necessary to

divide accounts into endogenous and exogenous accounts before any quantitative analysis can be done. In Section 4.4, the data used for the analysis was described. The South African SAM model includes 26 different household and sectoral surveys for the year 2000, which includes expenditure and income and labour surveys. There are also three additional accounts added into the South African SAM model, including, unskilled male and female labour, an EPWP sector which employs this unskilled labour, and the inputs used to produce the EPWP output.

Through the application of an export "shock" to the data, the spill-over effects between services and the other sectors in the economy can be determined. These spill-over effects can be measured in terms of spill-over to productivity, GDP as well as labour. When an injection or "shock" is applied, it is given by the change in elements of the exogenous accounts. In this model, the multipliers, like their input-output analogues, are completely demand driven. The exogenous accounts located in the rows of the model provide the "leakages". The leakages mentioned are, for example, the induced savings and induced government spending (McDonald, et al., 1997).

The multiplier analysis includes direct, indirect and induced effects which can be summarised as follows (Plumstead, 2012):

- In the mining industry, for example, the direct impact would be the expenditures used to construct and operate a mine, such as labour, materials and capital.
- The indirect effects would then be the suppliers of the mine, expanding production and purchasing goods and services in order to meet the expanded demand.
- The induced effect is the result of the mine employees purchasing goods and services on a household level.

The goal of the Social Accounting Matrix analysis is to measure the overall effect that the expansion of one sector can have on all the other sectors and these sectors combined, through production multipliers, GDP multipliers and labour multipliers. This study, using the SAM model, specifically focused on the impact of the services sectors in the South African economy, and more specifically what an increase in the exports of services would mean for the economy.

The following SAM services sectors are more tradable/exportable than the others in commercial terms, and thus they were used in the analysis of this study (see Section 4.2.4):

- Building and Construction
- Trade
- Accommodation
- Communication
- Finance and Insurance
- Real Estate
- Business Services
- Community, Social and Personal Services

In Section 5.3, the empirical results for the services industry regarding the production multiplier, GDP multiplier and the labour multipliers were discussed. Each sector, as defined by the Social Accounting Matrix sub-sectors, were included as a primary market stimulus, in order to calculate the direct, indirect and induced multiplier effects in terms of production, GDP and labour. Each of the multipliers calculated was described in Chapter 4, and in order to calculate the multiplier effects, a 1000 million increase or shock (see Section 4.4.2) was applied to each selected services sector.

The analysis indicated that the services sectors with the highest total direct production multiplier effect throughout the total South African economy are Building and Construction, Real Estate and Accommodation. Furthermore, the services sectors with the highest total indirect production multiplier effects throughout the total South African economy are the Building and Construction, Real Estate and the Communication sectors. Finally, the services sectors with the highest total induced production multiplier effects throughout the total South African economy are Accommodation, Real Estate as well as the Building and Construction sector.

In terms of the GDP multiplier analysis, it was found that the services sectors with the highest total direct GDP multiplier effects throughout the total South African economy are the Business Services, Finance and Insurance and Community, Social and Personal Services sectors. Furthermore, the services sectors with the highest

total indirect GDP multiplier effects throughout the total South African economy are the Building and Construction, Real Estate and Accommodation sectors. Finally, the services sectors with the highest total induced GDP multiplier effects throughout the South African economy are the Accommodation, Real Estate and Building and Construction sectors.

In terms of the labour multiplier analysis, the services sectors with the highest total direct labour multiplier effects throughout the South African economy are the Business Services, Community, Social and Personal Services and Accommodation sectors. Furthermore, the services sectors with the highest total indirect Labour multiplier effects throughout the South African economy are the Building and Construction, Accommodation and Real Estate sectors. Finally, the services sectors with the highest total induced labour multiplier effects throughout the South African economy are the Accommodation, Real Estate and Building and Construction sectors.

The aim of this study was to determine the most employment-intensive services sectors and their linkages with other sectors within the South African economy, in order to make recommendations for policy makers towards sustainable economic growth and job creation in the services sector. To this end, it was found that an increase in the exports of services in South Africa has a definite impact on employment in the following sectors:

- Production
    - Building and Construction, Real Estate and Accommodation
- GDP
    - Real Estate, Accommodation, and Building and Construction
- Labour
    - Community, Social and Personal Services, Accommodation, and Business Services

These results can contribute greatly to policy decisions on provincial and national level. The section that follows will provide recommendations on how the results of this study can be applied to policy.

6.3 Policy recommendations

The overall direction of the Industrial Policy Action Plan (IPAP) is focused more towards the manufacturing industry. The NEDP focuses its efforts to promote and improve exports for South African exporters, whereas the NDP and NGP focus towards the improvement of infrastructure, the agricultural value chain, the mining value chain, the green economy, manufacturing sectors, which are included in IPAP2, tourism and certain high-level services. Thus, the focus is not towards specific services sectors, and this study has given some indication to which sectors the government can move its focus towards the services industry.

The first policy recommendation is to establish a unit within the government to specifically focus on the export promotion of services. The focus of the unit can firstly be drawn towards export expansion methods, as well as export methods within the services industry. The unit should not limit its focus towards services export promotion, but also focus towards services import substitution, where South African services sectors could be the preferred value added input for manufacturing, agriculture and other services sectors. This could provide the needed backward-and forward market linkages within the South African economy, where export expansion can be maximised in terms of GDP, production and employment growth. Furthermore, the efforts should focus on specific identified services sectors, and these sectors should be promoted through market information, trade fairs, South African services global promotion and stimulative trade agreements on plans.

Thus, it would be highly efficient to create a services sector action plan which places specific focus towards the identified sectors Accommodation, Real Estate and Building and Construction, Community, Social and Personal Services, and Business Services including export opportunity and export facilitation services. This will provide maximum contribution towards GDP, production, and employment growth within services exports. This can furthermore also include incentive schemes for current and potential exporters, in order to provide the support to make export expansion possible. This will provide an economic environment for the services sectors which provides stimulation, growth and prosperity.

6.4 Limitations

In the process of conducting the study some limitations were identified. The study was limited to the 2006 SAM data, which includes data from pre-2008 economic crisis. This specific data was used because it was the most recent data available in its context. Furthermore, the specific model does not include the sub-division of sectors, which calculates linkages and leakages on a more macro-level. Thus, the analysis limits sub-sectoral specific results, but it still provides insights on a macro-economic level intended for this study.

6.5 Future research

The results given by this study indicate possible avenues for future research. The first recommendation is to compare the results from the 2006 SAM with a more recent SAM survey on its release. This could provide insight on sectoral forward-and-backward linkages changes, if any have occurred. This could provide further motivation for the stimulus and export expansion of specific services sectors as established by this study.

The second research recommendation is to investigate the results from this study on a more sector-specific level. This would include the spill-over effects of sub-sectors within the services sectors identified in Section 5.3. This would also provide further insight on specific sub-sectors and their potential to be catalysts for employment creation in South Africa. Furthermore, this will provide the needed insight on sub-sectors which could provide more sub-sectoral specific policy recommendations.

The third recommendation is to determine specific services sub-sector trading partners for the services sectors identified within the study. This could provide insight in more specific policy making focused towards the export promotion of these services sub-sectors. This would provide a more effective strategy for export promotion and expansion for South African services sectors.

The fourth recommendation is to combine the most efficient modes of supply for the identified services sectors in this study. This could be focused towards specific export supply methods for the most prominent South African trading partners. Furthermore, this could provide insight for specific services sectors on more efficient export expansion and growth.

6.6 Conclusion

The objective of this study was to determining the most employment-intensive services sectors and their linkages within the South African economy, in order to determine recommendations for policy makers towards sustainable economic growth and job creation. This, together with the identification of linkages in other sectors, can support more focused policy making.

It would be beneficial for the DTI in South Africa to focus on the promotion and stimulation of specific services sectors. This DTI unit could further address specific limitations and challenges experienced in the export and trade of services in South Africa. The results from the SAM model provide a basis for policy decision making and strategy within the unit.

ANNEXURES

Annexure A

Production multiplier results for each services sector

Table A1-Production Multiplier (Building and Construction)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.01	0.00	0.01	0.01	0.02
Deciduous Fruit Farming	0.01	0.01	0.01	0.01	0.02
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.03	0.02	0.06	0.03	0.09
Livestock Farming	0.04	0.04	0.08	0.04	0.12
Game Farming	0.00	0.00	0.01	0.00	0.01
Dairy Farming (milk only)	0.01	0.01	0.03	0.02	0.05
Forestry	3.21	2.22	5.42	3.43	8.86
Fishing	0.01	0.01	0.02	0.01	0.03
Cereal and Crop Farming	0.08	0.09	0.17	0.08	0.25
Poultry Farming	0.11	0.09	0.20	0.12	0.31
Other Agriculture	0.17	0.12	0.29	0.18	0.47
Gold	0.00	0.00	0.00	0.00	0.01
Coal and lignite	5.18	2.46	7.64	5.99	13.63
Other Mining	31.16	25.69	56.85	33.96	90.81
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.24	0.33	0.57	0.23	0.80
Dairy products	0.39	0.42	0.81	0.40	1.21
Grain Mill, Bakery and Animal Feed Products	0.30	0.35	0.65	0.31	0.95
Other food products	0.36	0.31	0.67	0.38	1.05
Beverages and tobacco products	0.81	0.64	1.45	0.88	2.33
Textiles, Clothing, Leather Products and Footwear	7.99	6.41	14.40	6.48	20.88

Wood and Wood Products	13.31	12.33	25.64	13.97	39.61
Furniture	11.09	9.95	21.04	11.02	32.06
Paper and Paper Products	6.98	7.25	14.23	6.50	20.73
Publishing and Printing	3.30	2.22	5.51	3.54	9.05
Chemicals & Chemical Products (incl Plastic Products)	72.34	71.00	143.34	66.37	209.71
Rubber Products	1.52	1.36	2.88	1.35	4.23
Non-Metallic Mineral Products	58.01	49.21	107.22	60.84	168.06
Basic Metal Products	33.27	39.13	72.40	31.20	103.60
Structural Metal Products	23.54	23.62	47.16	22.79	69.95
Other Fabricated Metal Products	4.54	4.66	9.20	4.11	13.31
Machinery & Equipment	22.14	22.98	45.11	19.86	64.97
Electrical Machinery & Apparatus	24.50	24.16	48.66	23.25	71.91
Communication, Medical and other Electronic Equipment	1.85	1.56	3.41	1.59	5.00
Manufacturing of Transport Equipment	5.23	5.71	10.93	3.71	14.65
Other Manufacturing & Recycling	0.77	0.45	1.22	0.84	2.06
Electricity	10.16	7.98	18.14	11.48	29.61
Water	0.44	0.44	0.88	0.44	1.32
Building & Construction	567.38	689.53	1 256.91	572.86	1 829.77
Trade	44.43	31.89	76.32	52.47	128.78
Accommodation	6.24	6.13	12.38	6.76	19.14
Transport	37.49	29.75	67.25	37.95	105.19
Communication	25.61	22.67	48.28	27.04	75.32
Finance & Insurance	22.02	9.21	31.23	25.02	56.25
Real Estate	14.31	13.99	28.30	15.13	43.43
Business Services	105.66	17.98	123.64	122.36	246.00

General Government Services	-	-	-	-	-
Community, Social and Personal Services	29.49	14.78	44.27	36.73	81.00
Total	1 195.72	1 159.17	2 354.89	1 231.71	3 586.61

Table A2-Production Multiplier (Trade)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.01	0.01	0.02	0.01	0.03
Deciduous Fruit Farming	0.02	0.01	0.03	0.02	0.04
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.01
Vegetable Farming	0.06	0.05	0.11	0.06	0.17
Livestock Farming	0.08	0.07	0.14	0.08	0.22
Game Farming	0.01	0.01	0.01	0.01	0.02
Dairy Farming (milk only)	0.03	0.03	0.05	0.03	0.08
Forestry	1.58	1.09	2.67	1.69	4.36
Fishing	0.02	0.02	0.04	0.02	0.06
Cereal and Crop Farming	0.16	0.17	0.32	0.14	0.46
Poultry Farming	0.20	0.16	0.37	0.22	0.58
Other Agriculture	0.24	0.17	0.41	0.25	0.65
Gold	0.00	0.00	0.01	0.00	0.01
Coal and lignite	2.51	1.19	3.71	2.91	6.61
Other Mining	5.31	4.37	9.68	5.78	15.46
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.39	0.54	0.94	0.37	1.31
Dairy products	0.63	0.69	1.32	0.66	1.97
Grain Mill, Bakery and Animal Feed Products	0.48	0.57	1.05	0.50	1.55
Other food products	0.60	0.50	1.10	0.62	1.72
Beverages and tobacco products	1.41	1.10	2.51	1.51	4.02
Textiles, Clothing, Leather Products and Footwear	5.31	4.26	9.58	4.31	13.89
Wood and Wood Products	2.65	2.45	5.10	2.78	7.88
Furniture	15.08	13.53	28.62	14.98	43.60
Paper and Paper Products	12.70	13.18	25.88	11.82	37.70

Publishing and Printing	4.91	3.30	8.21	5.27	13.49
Chemicals & Chemical Products (incl Plastic Products)	46.58	45.72	92.29	42.73	135.02
Rubber Products	2.15	1.92	4.06	1.91	5.98
Non-Metallic Mineral Products	2.94	2.50	5.44	3.09	8.53
Basic Metal Products	6.70	7.88	14.58	6.28	20.85
Structural Metal Products	0.90	0.91	1.81	0.88	2.69
Other Fabricated Metal Products	3.11	3.20	6.31	2.82	9.12
Machinery & Equipment	10.30	10.69	20.99	9.24	30.23
Electrical Machinery & Apparatus	2.31	2.28	4.59	2.19	6.79
Communication, Medical and other Electronic Equipment	2.94	2.47	5.42	2.53	7.95
Manufacturing of Transport Equipment	7.05	7.70	14.75	5.01	19.76
Other Manufacturing & Recycling	1.04	0.62	1.66	1.15	2.81
Electricity	9.21	7.24	16.45	10.41	26.86
Water	0.44	0.44	0.88	0.44	1.33
Building & Construction	12.86	15.62	28.48	12.98	41.46
Trade	135.51	97.25	232.75	160.02	392.77
Accommodation	12.05	11.83	23.88	13.05	36.93
Transport	44.05	34.96	79.01	44.59	123.60
Communication	49.41	43.75	93.16	52.17	145.33
Finance & Insurance	36.89	15.42	52.32	41.92	94.23
Real Estate	19.54	19.10	38.64	20.66	59.30
Business Services	118.53	20.17	138.70	137.26	275.97
General Government Services	-	-	-	-	-
Community, Social and Personal Services	21.55	10.80	32.35	26.85	59.20
Total	600.45	409.94	1 010.40	652.21	1 662.61

Table A3-Production Multiplier (Accommodation)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.21	0.16	0.37	0.21	0.58
Deciduous Fruit Farming	0.27	0.18	0.45	0.29	0.74
Subtropical Fruit Farming	0.05	0.03	0.08	0.05	0.13
Vegetable Farming	1.95	1.42	3.37	1.99	5.36
Livestock Farming	0.99	0.84	1.83	0.99	2.82
Game Farming	0.08	0.07	0.15	0.08	0.23
Dairy Farming (milk only)	0.48	0.47	0.94	0.50	1.44
Forestry	1.43	0.99	2.41	1.53	3.94
Fishing	0.20	0.18	0.38	0.19	0.57
Cereal and Crop Farming	1.98	2.11	4.09	1.77	5.86
Poultry Farming	3.70	2.96	6.67	3.97	10.64
Other Agriculture	3.23	2.27	5.50	3.33	8.83
Gold	0.00	0.00	0.01	0.01	0.01
Coal and lignite	7.00	3.33	10.34	8.11	18.44
Other Mining	5.60	4.61	10.21	6.10	16.31
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	8.24	11.37	19.61	7.76	27.37
Dairy products	13.22	14.33	27.56	13.72	41.28
Grain Mill, Bakery and Animal Feed Products	9.96	11.81	21.77	10.35	32.12
Other food products	12.45	10.51	22.97	13.05	36.02
Beverages and tobacco products	30.06	23.47	53.53	32.28	85.81
Textiles, Clothing, Leather Products and Footwear	4.56	3.66	8.21	3.70	11.91
Wood and Wood Products	3.16	2.92	6.08	3.31	9.39
Furniture	13.82	12.40	26.23	13.73	39.96

Paper and Paper Products	9.35	9.70	19.05	8.70	27.75
Publishing and Printing	3.47	2.33	5.80	3.73	9.53
Chemicals & Chemical Products (incl Plastic Products)	40.82	40.07	80.89	37.45	118.35
Rubber Products	1.32	1.18	2.49	1.17	3.67
Non-Metallic Mineral Products	6.97	5.91	12.88	7.31	20.19
Basic Metal Products	7.03	8.27	15.31	6.59	21.90
Structural Metal Products	0.72	0.72	1.44	0.70	2.13
Other Fabricated Metal Products	5.15	5.29	10.44	4.66	15.11
Machinery & Equipment	10.07	10.46	20.53	9.04	29.57
Electrical Machinery & Apparatus	3.32	3.27	6.59	3.15	9.73
Communication, Medical and other Electronic Equipment	1.71	1.44	3.15	1.47	4.62
Manufacturing of Transport Equipment	4.07	4.44	8.51	2.89	11.40
Other Manufacturing & Recycling	1.41	0.83	2.24	1.55	3.80
Electricity	40.21	31.59	71.80	45.43	117.23
Water	2.52	2.55	5.07	2.55	7.62
Building & Construction	11.43	13.89	25.32	11.54	36.86
Trade	20.51	14.72	35.23	24.22	59.45
Accommodation	511.35	502.18	1 013.53	553.86	1 567.39
Transport	25.64	20.35	45.99	25.95	71.94
Communication	28.01	24.80	52.80	29.57	82.37
Finance & Insurance	33.91	14.17	48.08	38.53	86.61
Real Estate	12.66	12.38	25.04	13.39	38.43
Business Services	227.75	38.76	266.51	263.74	530.25
General Government Services	-	-	-	-	-
Community, Social and Personal Services	32.78	16.43	49.20	40.83	90.03
Total	1 164.82	895.84	2 060.66	1 265.03	3 325.70

Table A4-Production Multiplier (Transport)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.01	0.01	0.01	0.01	0.02
Deciduous Fruit Farming	0.01	0.01	0.01	0.01	0.02
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.03	0.02	0.06	0.03	0.09
Livestock Farming	0.04	0.04	0.08	0.04	0.12
Game Farming	0.00	0.00	0.01	0.00	0.01
Dairy Farming (milk only)	0.02	0.01	0.03	0.02	0.05
Forestry	1.42	0.98	2.41	1.52	3.93
Fishing	0.01	0.01	0.02	0.01	0.03
Cereal and Crop Farming	0.08	0.09	0.17	0.07	0.25
Poultry Farming	0.11	0.09	0.20	0.12	0.32
Other Agriculture	0.21	0.15	0.36	0.22	0.57
Gold	0.01	0.01	0.02	0.01	0.03
Coal and lignite	4.70	2.24	6.94	5.44	12.38
Other Mining	11.87	9.78	21.65	12.93	34.58
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.29	0.40	0.69	0.27	0.97
Dairy products	0.47	0.51	0.98	0.49	1.46
Grain Mill, Bakery and Animal Feed Products	0.35	0.41	0.76	0.36	1.13
Other food products	0.44	0.37	0.81	0.46	1.27
Beverages and tobacco products	1.04	0.81	1.85	1.11	2.96
Textiles, Clothing, Leather Products and Footwear	9.71	7.80	17.51	7.88	25.39
Wood and Wood Products	2.97	2.75	5.71	3.11	8.83
Furniture	10.03	9.00	19.02	9.96	28.98

Paper and Paper Products	9.92	10.30	20.22	9.23	29.45
Publishing and Printing	3.09	2.08	5.17	3.32	8.48
Chemicals & Chemical Products (incl Plastic Products)	134.47	131.99	266.45	123.37	389.82
Rubber Products	8.50	7.60	16.11	7.58	23.69
Non-Metallic Mineral Products	4.71	3.99	8.70	4.94	13.64
Basic Metal Products	10.32	12.13	22.45	9.67	32.12
Structural Metal Products	0.71	0.71	1.42	0.69	2.11
Other Fabricated Metal Products	6.47	6.66	13.13	5.86	18.99
Machinery & Equipment	11.69	12.14	23.83	10.49	34.33
Electrical Machinery & Apparatus	5.21	5.14	10.36	4.95	15.30
Communication, Medical and other Electronic Equipment	1.83	1.54	3.37	1.57	4.94
Manufacturing of Transport Equipment	25.86	28.22	54.08	18.35	72.43
Other Manufacturing & Recycling	3.17	1.88	5.06	3.50	8.55
Electricity	14.30	11.24	25.53	16.15	41.69
Water	0.73	0.74	1.46	0.73	2.20
Building & Construction	11.26	13.68	24.94	11.37	36.31
Trade	18.59	13.34	31.92	21.95	53.87
Accommodation	5.86	5.76	11.62	6.35	17.98
Transport	520.48	413.05	933.53	526.82	1 460.35
Communication	24.05	21.30	45.35	25.40	70.74
Finance & Insurance	25.02	10.46	35.48	28.43	63.92
Real Estate	25.29	24.72	50.00	26.73	76.74
Business Services	81.74	13.91	95.65	94.65	190.30
General Government Services	-	-	-	-	-
Community, Social and Personal Services	64.89	32.52	97.41	80.83	178.23
Total	1 061.97	820.57	1 882.54	1 087.03	2 969.57

Table A5-Production Multiplier (Communication)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.01	0.01	0.03	0.01	0.04
Deciduous Fruit Farming	0.02	0.01	0.03	0.02	0.05
Subtropical Fruit Farming	0.00	0.00	0.01	0.00	0.01
Vegetable Farming	0.12	0.09	0.20	0.12	0.32
Livestock Farming	0.07	0.06	0.13	0.07	0.21
Game Farming	0.01	0.00	0.01	0.01	0.02
Dairy Farming (milk only)	0.03	0.03	0.06	0.03	0.10
Forestry	1.10	0.76	1.87	1.18	3.05
Fishing	0.02	0.01	0.03	0.02	0.05
Cereal and Crop Farming	0.15	0.16	0.30	0.13	0.43
Poultry Farming	0.25	0.20	0.44	0.26	0.71
Other Agriculture	0.27	0.19	0.46	0.28	0.75
Gold	0.00	0.00	0.01	0.00	0.01
Coal and lignite	3.90	1.85	5.75	4.51	10.26
Other Mining	7.09	5.84	12.93	7.73	20.66
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.56	0.77	1.33	0.53	1.86
Dairy products	0.90	0.97	1.87	0.93	2.81
Grain Mill, Bakery and Animal Feed Products	0.68	0.80	1.48	0.70	2.18
Other food products	0.85	0.71	1.56	0.89	2.45
Beverages and tobacco products	2.02	1.58	3.60	2.17	5.78
Textiles, Clothing, Leather Products and Footwear	13.60	10.92	24.52	11.04	35.56
Wood and Wood Products	2.17	2.02	4.19	2.28	6.47
Furniture	9.73	8.73	18.47	9.67	28.14

Paper and Paper Products	7.94	8.25	16.19	7.39	23.59
Publishing and Printing	9.62	6.47	16.09	10.33	26.43
Chemicals & Chemical Products (incl Plastic Products)	50.04	49.11	99.15	45.91	145.05
Rubber Products	2.23	2.00	4.23	1.99	6.22
Non-Metallic Mineral Products	2.53	2.15	4.67	2.65	7.33
Basic Metal Products	19.16	22.54	41.70	17.97	59.66
Structural Metal Products	0.35	0.35	0.70	0.34	1.04
Other Fabricated Metal Products	4.09	4.20	8.29	3.70	11.99
Machinery & Equipment	22.60	23.46	46.06	20.27	66.33
Electrical Machinery & Apparatus	4.74	4.68	9.42	4.50	13.92
Communication, Medical and other Electronic Equipment	35.84	30.12	65.97	30.79	96.76
Manufacturing of Transport Equipment	6.91	7.54	14.45	4.90	19.35
Other Manufacturing & Recycling	1.09	0.65	1.73	1.20	2.93
Electricity	14.62	11.49	26.11	16.52	42.63
Water	0.58	0.58	1.16	0.58	1.74
Building & Construction	4.17	5.06	9.23	4.21	13.44
Trade	20.77	14.90	35.67	24.52	60.19
Accommodation	29.41	28.88	58.30	31.86	90.15
Transport	44.44	35.27	79.71	44.98	124.69
Communication	651.01	576.40	1 227.42	687.37	1 914.78
Finance & Insurance	21.05	8.80	29.85	23.92	53.76
Real Estate	6.64	6.49	13.13	7.02	20.15
Business Services	56.41	9.60	66.01	65.32	131.33
General Government Services	-	-	-	-	-
Community, Social and Personal Services	19.33	9.69	29.02	24.08	53.10
Total	1 079.12	904.42	1 983.54	1 124.93	3 108.47

Table A6-Production Multiplier (Finance and Insurance)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.00	0.00	0.00	0.00	0.01
Deciduous Fruit Farming	0.00	0.00	0.00	0.00	0.01
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.01	0.01	0.02	0.01	0.03
Livestock Farming	0.01	0.01	0.02	0.01	0.04
Game Farming	0.00	0.00	0.00	0.00	0.00
Dairy Farming (milk only)	0.01	0.00	0.01	0.01	0.02
Forestry	0.72	0.50	1.22	0.77	1.99
Fishing	0.00	0.00	0.01	0.00	0.01
Cereal and Crop Farming	0.03	0.03	0.05	0.02	0.08
Poultry Farming	0.04	0.03	0.07	0.04	0.11
Other Agriculture	0.05	0.03	0.08	0.05	0.14
Gold	0.00	0.00	0.01	0.00	0.01
Coal and lignite	0.89	0.42	1.32	1.03	2.35
Other Mining	1.79	1.47	3.26	1.95	5.21
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.08	0.11	0.19	0.08	0.27
Dairy products	0.13	0.14	0.27	0.13	0.40
Grain Mill, Bakery and Animal Feed Products	0.10	0.12	0.21	0.10	0.31
Other food products	0.12	0.10	0.22	0.13	0.35
Beverages and tobacco products	0.28	0.22	0.50	0.30	0.80
Textiles, Clothing, Leather Products and Footwear	1.60	1.28	2.88	1.30	4.18
Wood and Wood Products	1.12	1.04	2.16	1.18	3.34
Furniture	9.04	8.11	17.16	8.98	26.14

Paper and Paper Products	5.99	6.22	12.21	5.57	17.78
Publishing and Printing	4.76	3.20	7.96	5.11	13.07
Chemicals & Chemical Products (incl Plastic Products)	13.53	13.28	26.81	12.41	39.22
Rubber Products	0.91	0.81	1.72	0.81	2.52
Non-Metallic Mineral Products	1.21	1.02	2.23	1.26	3.49
Basic Metal Products	2.11	2.48	4.59	1.98	6.56
Structural Metal Products	0.32	0.32	0.64	0.31	0.94
Other Fabricated Metal Products	1.30	1.33	2.63	1.17	3.81
Machinery & Equipment	2.51	2.61	5.12	2.25	7.37
Electrical Machinery & Apparatus	0.77	0.76	1.53	0.73	2.26
Communication, Medical and other Electronic Equipment	0.58	0.49	1.07	0.50	1.57
Manufacturing of Transport Equipment	2.84	3.10	5.94	2.02	7.96
Other Manufacturing & Recycling	1.16	0.69	1.84	1.28	3.12
Electricity	3.19	2.51	5.70	3.61	9.31
Water	0.23	0.23	0.47	0.23	0.70
Building & Construction	4.48	5.45	9.93	4.52	14.45
Trade	5.37	3.86	9.23	6.35	15.58
Accommodation	2.27	2.23	4.49	2.46	6.95
Transport	9.26	7.35	16.61	9.37	25.98
Communication	9.30	8.23	17.53	9.82	27.35
Finance & Insurance	742.68	310.46	1 053.14	843.84	1 896.99
Real Estate	39.43	38.54	77.96	41.69	119.65
Business Services	52.68	8.96	61.64	61.00	122.64
General Government Services	-	-	-	-	-
Community, Social and Personal Services	64.30	32.23	96.53	80.10	176.63
Total	987.19	469.99	1 457.18	1 114.49	2 571.67

Table A7-Production Multiplier (Real Estate)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.01	0.00	0.01	0.01	0.02
Deciduous Fruit Farming	0.01	0.01	0.01	0.01	0.02
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.03	0.03	0.06	0.04	0.10
Livestock Farming	0.04	0.03	0.07	0.04	0.10
Game Farming	0.00	0.00	0.01	0.00	0.01
Dairy Farming (milk only)	0.01	0.01	0.03	0.01	0.04
Forestry	1.57	1.08	2.65	1.67	4.32
Fishing	0.01	0.01	0.02	0.01	0.03
Cereal and Crop Farming	0.07	0.08	0.15	0.07	0.22
Poultry Farming	0.10	0.08	0.19	0.11	0.30
Other Agriculture	0.14	0.10	0.24	0.15	0.39
Gold	0.01	0.00	0.01	0.01	0.02
Coal and lignite	3.20	1.52	4.73	3.71	8.43
Other Mining	6.88	5.67	12.54	7.49	20.04
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.24	0.33	0.57	0.22	0.79
Dairy products	0.38	0.41	0.80	0.40	1.19
Grain Mill, Bakery and Animal Feed Products	0.29	0.34	0.63	0.30	0.93
Other food products	0.36	0.30	0.66	0.38	1.04
Beverages and tobacco products	0.84	0.65	1.49	0.90	2.39
Textiles, Clothing, Leather Products and Footwear	5.48	4.40	9.87	4.44	14.32
Wood and Wood Products	4.83	4.47	9.30	5.07	14.36
Furniture	16.77	15.05	31.82	16.66	48.47

Paper and Paper Products	7.09	7.36	14.45	6.60	21.05
Publishing and Printing	6.55	4.40	10.95	7.03	17.98
Chemicals & Chemical Products (incl Plastic Products)	48.21	47.32	95.53	44.23	139.77
Rubber Products	1.45	1.30	2.75	1.30	4.05
Non-Metallic Mineral Products	10.16	8.62	18.78	10.66	29.44
Basic Metal Products	7.95	9.35	17.30	7.45	24.76
Structural Metal Products	2.74	2.75	5.48	2.65	8.13
Other Fabricated Metal Products	5.77	5.94	11.71	5.23	16.94
Machinery & Equipment	8.22	8.53	16.75	7.37	24.12
Electrical Machinery & Apparatus	4.83	4.76	9.59	4.58	14.17
Communication, Medical and other Electronic Equipment	1.63	1.37	3.01	1.40	4.41
Manufacturing of Transport Equipment	4.67	5.10	9.77	3.32	13.08
Other Manufacturing & Recycling	1.84	1.09	2.93	2.03	4.96
Electricity	10.41	8.18	18.60	11.77	30.36
Water	1.27	1.29	2.56	1.28	3.84
Building & Construction	39.34	47.81	87.14	39.72	126.86
Trade	16.89	12.12	29.01	19.94	48.95
Accommodation	6.45	6.33	12.78	6.98	19.76
Transport	19.11	15.16	34.27	19.34	53.61
Communication	26.44	23.41	49.86	27.92	77.78
Finance & Insurance	163.64	68.41	232.05	185.93	417.98
Real Estate	526.90	515.03	1 041.93	557.09	1 599.02
Business Services	97.45	16.58	114.03	112.85	226.88
General Government Services	-	-	-	-	-
Community, Social and Personal Services	104.78	52.51	157.29	130.52	287.82
Total	1 165.06	909.32	2 074.38	1 258.88	3 333.26

Table A8-Production Multiplier (Business Services)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.00	0.00	0.01	0.00	0.01
Deciduous Fruit Farming	0.01	0.01	0.01	0.01	0.02
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.02	0.02	0.04	0.02	0.06
Livestock Farming	0.05	0.04	0.09	0.05	0.14
Game Farming	0.00	0.00	0.01	0.00	0.01
Dairy Farming (milk only)	0.02	0.02	0.03	0.02	0.05
Forestry	0.50	0.35	0.85	0.54	1.39
Fishing	0.02	0.02	0.03	0.02	0.05
Cereal and Crop Farming	0.10	0.11	0.21	0.09	0.30
Poultry Farming	0.11	0.09	0.20	0.12	0.32
Other Agriculture	0.12	0.08	0.20	0.12	0.33
Gold	0.00	0.00	0.01	0.00	0.01
Coal and lignite	0.56	0.27	0.82	0.65	1.47
Other Mining	1.67	1.37	3.04	1.82	4.86
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.14	0.19	0.34	0.13	0.47
Dairy products	0.23	0.24	0.47	0.23	0.70
Grain Mill, Bakery and Animal Feed Products	0.18	0.21	0.39	0.18	0.57
Other food products	0.21	0.18	0.39	0.22	0.62
Beverages and tobacco products	0.50	0.39	0.89	0.54	1.43
Textiles, Clothing, Leather Products and Footwear	1.17	0.94	2.12	0.95	3.07
Wood and Wood Products	0.71	0.66	1.37	0.74	2.11
Furniture	5.35	4.80	10.15	5.31	15.46

Paper and Paper Products	3.78	3.92	7.69	3.51	11.21
Publishing and Printing	1.90	1.28	3.17	2.04	5.21
Chemicals & Chemical Products (incl Plastic Products)	9.72	9.54	19.26	8.92	28.17
Rubber Products	0.43	0.38	0.81	0.38	1.19
Non-Metallic Mineral Products	0.92	0.78	1.71	0.97	2.68
Basic Metal Products	1.89	2.23	4.12	1.78	5.90
Structural Metal Products	0.29	0.29	0.59	0.28	0.87
Other Fabricated Metal Products	0.90	0.93	1.83	0.82	2.65
Machinery & Equipment	2.23	2.32	4.55	2.00	6.55
Electrical Machinery & Apparatus	0.59	0.58	1.18	0.56	1.74
Communication, Medical and other Electronic Equipment	0.64	0.54	1.18	0.55	1.73
Manufacturing of Transport Equipment	1.87	2.04	3.90	1.32	5.23
Other Manufacturing & Recycling	1.30	0.77	2.07	1.44	3.51
Electricity	1.39	1.09	2.48	1.57	4.05
Water	0.07	0.07	0.15	0.07	0.22
Building & Construction	2.03	2.47	4.49	2.05	6.54
Trade	3.68	2.64	6.32	4.34	10.66
Accommodation	2.40	2.36	4.76	2.60	7.36
Transport	9.02	7.16	16.17	9.13	25.30
Communication	9.85	8.72	18.56	10.40	28.96
Finance & Insurance	7.09	2.96	10.05	8.05	18.11
Real Estate	3.43	3.36	6.79	3.63	10.42
Business Services	880.74	149.88	1 030.62	1 019.93	2 050.55
General Government Services	-	-	-	-	-
Community, Social and Personal Services	19.31	9.68	28.99	24.06	53.05
Total	977.14	225.96	1 203.10	1 122.17	2 325.28

Table A9-Production Multiplier (Community, Social and Personal Services)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.01	0.01	0.01	0.01	0.02
Deciduous Fruit Farming	0.01	0.01	0.02	0.01	0.03
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.04	0.03	0.06	0.04	0.10
Livestock Farming	0.03	0.03	0.06	0.03	0.09
Game Farming	0.00	0.00	0.00	0.00	0.01
Dairy Farming (milk only)	0.02	0.02	0.03	0.02	0.05
Forestry	0.88	0.60	1.48	0.94	2.42
Fishing	0.01	0.01	0.01	0.01	0.02
Cereal and Crop Farming	0.06	0.06	0.12	0.05	0.18
Poultry Farming	0.13	0.10	0.23	0.14	0.36
Other Agriculture	0.12	0.08	0.20	0.12	0.32
Gold	0.01	0.01	0.02	0.01	0.03
Coal and lignite	1.87	0.89	2.76	2.17	4.93
Other Mining	3.46	2.85	6.31	3.77	10.08
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.22	0.31	0.53	0.21	0.74
Dairy products	0.36	0.39	0.74	0.37	1.11
Grain Mill, Bakery and Animal Feed Products	0.27	0.32	0.60	0.28	0.88
Other food products	0.34	0.28	0.62	0.35	0.97
Beverages and tobacco products	0.79	0.62	1.41	0.85	2.27
Textiles, Clothing, Leather Products and Footwear	3.73	2.99	6.72	3.02	9.74
Wood and Wood Products	1.66	1.54	3.20	1.74	4.94
Furniture	10.60	9.51	20.11	10.53	30.65

Paper and Paper Products	6.59	6.84	13.43	6.13	19.56
Publishing and Printing	3.30	2.22	5.52	3.55	9.07
Chemicals & Chemical Products (incl Plastic Products)	27.23	26.73	53.96	24.98	78.95
Rubber Products	6.14	5.49	11.64	5.48	17.12
Non-Metallic Mineral Products	1.46	1.24	2.70	1.53	4.23
Basic Metal Products	5.28	6.21	11.49	4.95	16.44
Structural Metal Products	0.28	0.28	0.57	0.27	0.84
Other Fabricated Metal Products	3.79	3.90	7.69	3.43	11.12
Machinery & Equipment	6.48	6.73	13.21	5.82	19.03
Electrical Machinery & Apparatus	1.09	1.08	2.17	1.03	3.20
Communication, Medical and other Electronic Equipment	1.10	0.92	2.02	0.94	2.96
Manufacturing of Transport Equipment	16.65	18.17	34.82	11.82	46.64
Other Manufacturing & Recycling	3.03	1.80	4.83	3.34	8.17
Electricity	4.99	3.92	8.91	5.64	14.56
Water	0.29	0.30	0.59	0.30	0.89
Building & Construction	3.42	4.15	7.57	3.45	11.02
Trade	8.00	5.74	13.74	9.45	23.19
Accommodation	3.30	3.24	6.54	3.57	10.11
Transport	12.91	10.25	23.16	13.07	36.23
Communication	13.53	11.98	25.50	14.28	39.78
Finance & Insurance	8.00	3.34	11.34	9.09	20.43
Real Estate	4.75	4.65	9.40	5.03	14.43
Business Services	51.12	8.70	59.82	59.20	119.02
General Government Services	-	-	-	-	-
Community, Social and Personal Services	789.74	395.79	1 185.52	983.74	2 169.27
Total	1 007.09	554.32	1 561.41	1 204.78	2 766.19

Annexure B

GDP multiplier results for each services sector

Table B1-GDP Multiplier (Building and Construction)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.00	0.00	0.00	0.00	0.01
Deciduous Fruit Farming	0.00	0.00	0.01	0.00	0.01
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.02	0.01	0.03	0.02	0.04
Livestock Farming	0.02	0.02	0.03	0.02	0.05
Game Farming	0.00	0.00	0.00	0.00	0.00
Dairy Farming (milk only)	0.01	0.01	0.01	0.01	0.02
Forestry	1.68	1.04	2.72	1.70	4.42
Fishing	0.00	0.00	0.01	0.01	0.01
Cereal and Crop Farming	0.02	0.04	0.06	0.04	0.10
Poultry Farming	0.06	0.04	0.09	0.06	0.15
Other Agriculture	0.08	0.05	0.14	0.09	0.23
Gold	0.00	0.00	0.00	0.00	0.00
Coal and lignite	3.55	1.04	4.59	2.97	7.57
Other Mining	14.93	11.04	25.98	16.87	42.84
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.02	0.15	0.17	0.11	0.29
Dairy products	0.09	0.21	0.31	0.20	0.51
Grain Mill, Bakery and Animal Feed Products	0.06	0.17	0.24	0.15	0.39
Other food products	0.16	0.13	0.29	0.19	0.48
Beverages and tobacco products	0.35	0.31	0.66	0.44	1.10
Textiles, Clothing, Leather Products and Footwear	1.99	2.91	4.90	3.23	8.13

Wood and Wood Products	4.93	5.65	10.58	6.95	17.54
Furniture	4.18	4.03	8.21	5.49	13.70
Paper and Paper Products	1.85	3.07	4.92	3.24	8.16
Publishing and Printing	1.62	0.98	2.60	1.76	4.36
Chemicals & Chemical Products (incl Plastic Products)	18.45	30.94	49.39	33.04	82.43
Rubber Products	0.42	0.60	1.02	0.67	1.69
Non-Metallic Mineral Products	22.50	23.31	45.81	30.30	76.11
Basic Metal Products	6.37	17.00	23.37	15.52	38.89
Structural Metal Products	7.61	9.51	17.12	11.35	28.47
Other Fabricated Metal Products	1.30	1.78	3.07	2.04	5.12
Machinery & Equipment	5.26	9.51	14.78	9.89	24.67
Electrical Machinery & Apparatus	6.98	10.37	17.35	11.58	28.93
Communication, Medical and other Electronic Equipment	0.57	0.62	1.19	0.79	1.98
Manufacturing of Transport Equipment	0.87	1.87	2.74	1.85	4.59
Other Manufacturing & Recycling	0.42	0.19	0.62	0.42	1.04
Electricity	5.04	3.79	8.83	5.71	14.55
Water	0.14	0.20	0.34	0.22	0.56
Building & Construction	128.41	282.01	410.41	284.85	695.26
Trade	23.29	16.00	39.29	26.13	65.42
Accommodation	1.83	3.38	5.20	3.37	8.57
Transport	15.73	13.44	29.17	18.90	48.08
Communication	10.83	9.96	20.79	13.47	34.26
Finance & Insurance	15.87	4.93	20.80	12.50	33.30
Real Estate	4.57	7.63	12.20	7.55	19.75
Business Services	93.41	9.44	102.85	61.12	163.97

General Government Services	-	-	-	-	-
Community, Social and Personal Services	18.74	7.76	26.50	18.34	44.84
Total	424.24	495.15	919.39	613.19	1 532.58

Table B2-GDP Multiplier (Trade)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.00	0.00	0.01	0.00	0.01
Deciduous Fruit Farming	0.01	0.00	0.01	0.01	0.02
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.03	0.02	0.05	0.03	0.08
Livestock Farming	0.03	0.03	0.06	0.04	0.10
Game Farming	0.00	0.00	0.01	0.00	0.01
Dairy Farming (milk only)	0.01	0.01	0.02	0.01	0.04
Forestry	0.83	0.51	1.34	0.84	2.17
Fishing	0.01	0.01	0.02	0.01	0.03
Cereal and Crop Farming	0.03	0.07	0.11	0.07	0.18
Poultry Farming	0.11	0.07	0.17	0.11	0.28
Other Agriculture	0.12	0.08	0.19	0.12	0.32
Gold	0.00	0.00	0.00	0.00	0.00
Coal and lignite	1.72	0.50	2.23	1.44	3.67
Other Mining	2.54	1.88	4.42	2.87	7.29
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.04	0.25	0.29	0.19	0.47
Dairy products	0.15	0.35	0.50	0.33	0.83
Grain Mill, Bakery and Animal Feed Products	0.11	0.28	0.38	0.25	0.63
Other food products	0.25	0.22	0.47	0.31	0.78
Beverages and tobacco products	0.61	0.53	1.14	0.75	1.89
Textiles, Clothing, Leather Products and Footwear	1.32	1.94	3.26	2.15	5.40
Wood and Wood Products	0.98	1.12	2.10	1.38	3.49
Furniture	5.69	5.48	11.17	7.46	18.63

Paper and Paper Products	3.37	5.58	8.95	5.89	14.83
Publishing and Printing	2.41	1.46	3.87	2.63	6.50
Chemicals & Chemical Products (incl Plastic Products)	11.88	19.92	31.80	21.27	53.07
Rubber Products	0.59	0.85	1.44	0.95	2.39
Non-Metallic Mineral Products	1.14	1.18	2.33	1.54	3.86
Basic Metal Products	1.28	3.42	4.70	3.12	7.83
Structural Metal Products	0.29	0.37	0.66	0.44	1.09
Other Fabricated Metal Products	0.89	1.22	2.11	1.40	3.51
Machinery & Equipment	2.45	4.43	6.88	4.60	11.48
Electrical Machinery & Apparatus	0.66	0.98	1.64	1.09	2.73
Communication, Medical and other Electronic Equipment	0.90	0.99	1.89	1.26	3.15
Manufacturing of Transport Equipment	1.17	2.53	3.70	2.49	6.19
Other Manufacturing & Recycling	0.58	0.26	0.84	0.57	1.41
Electricity	4.57	3.44	8.01	5.18	13.19
Water	0.14	0.20	0.34	0.22	0.56
Building & Construction	2.91	6.39	9.30	6.45	15.75
Trade	71.03	48.80	119.82	79.71	199.53
Accommodation	3.52	6.52	10.04	6.50	16.55
Transport	18.48	15.80	34.28	22.21	56.49
Communication	20.90	19.22	40.12	25.98	66.11
Finance & Insurance	26.59	8.26	34.84	20.94	55.78
Real Estate	6.24	10.41	16.65	10.31	26.96
Business Services	104.79	10.59	115.38	68.57	183.95
General Government Services	-	-	-	-	-
Community, Social and Personal Services	13.69	5.67	19.37	13.41	32.77
Total	315.08	191.84	506.91	325.13	832.05

Table B3-GDP Multiplier (Accommodation)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.09	0.07	0.16	0.10	0.27
Deciduous Fruit Farming	0.15	0.08	0.23	0.14	0.37
Subtropical Fruit Farming	0.03	0.01	0.04	0.03	0.07
Vegetable Farming	0.93	0.64	1.56	0.99	2.55
Livestock Farming	0.39	0.38	0.78	0.49	1.27
Game Farming	0.03	0.03	0.06	0.04	0.11
Dairy Farming (milk only)	0.17	0.22	0.39	0.25	0.64
Forestry	0.75	0.46	1.21	0.76	1.97
Fishing	0.07	0.08	0.15	0.10	0.25
Cereal and Crop Farming	0.42	0.94	1.36	0.88	2.24
Poultry Farming	1.96	1.22	3.18	1.97	5.15
Other Agriculture	1.59	1.03	2.63	1.65	4.28
Gold	0.00	0.00	0.00	0.00	0.01
Coal and lignite	4.81	1.41	6.22	4.02	10.24
Other Mining	2.68	1.98	4.67	3.03	7.70
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.79	5.19	5.98	3.87	9.84
Dairy products	3.19	7.26	10.46	6.84	17.30
Grain Mill, Bakery and Animal Feed Products	2.19	5.79	7.99	5.16	13.14
Other food products	5.30	4.53	9.83	6.50	16.33
Beverages and tobacco products	12.94	11.40	24.34	16.08	40.43
Textiles, Clothing, Leather Products and Footwear	1.13	1.66	2.79	1.84	4.64
Wood and Wood Products	1.17	1.34	2.51	1.65	4.16

Furniture	5.21	5.02	10.23	6.84	17.07
Paper and Paper Products	2.48	4.11	6.59	4.33	10.92
Publishing and Printing	1.70	1.03	2.73	1.86	4.59
Chemicals & Chemical Products (incl Plastic Products)	10.41	17.46	27.87	18.65	46.52
Rubber Products	0.36	0.52	0.88	0.58	1.47
Non-Metallic Mineral Products	2.70	2.80	5.50	3.64	9.14
Basic Metal Products	1.35	3.59	4.94	3.28	8.22
Structural Metal Products	0.23	0.29	0.52	0.35	0.87
Other Fabricated Metal Products	1.47	2.02	3.49	2.32	5.81
Machinery & Equipment	2.39	4.33	6.72	4.50	11.23
Electrical Machinery & Apparatus	0.95	1.40	2.35	1.57	3.92
Communication, Medical and other Electronic Equipment	0.52	0.58	1.10	0.73	1.83
Manufacturing of Transport Equipment	0.68	1.46	2.14	1.44	3.57
Other Manufacturing & Recycling	0.78	0.36	1.14	0.77	1.91
Electricity	19.95	15.02	34.97	22.62	57.59
Water	0.82	1.15	1.97	1.27	3.24
Building & Construction	2.59	5.68	8.27	5.74	14.01
Trade	10.75	7.39	18.14	12.06	30.20
Accommodation	149.55	276.64	426.19	276.03	702.22
Transport	10.76	9.19	19.95	12.93	32.88
Communication	11.85	10.89	22.74	14.73	37.47
Finance & Insurance	24.44	7.59	32.02	19.24	51.27
Real Estate	4.04	6.75	10.79	6.68	17.47
Business Services	201.34	20.35	221.69	131.75	353.45
General Government Services	-	-	-	-	-
Community, Social and Personal Services	20.83	8.63	29.45	20.39	49.84
Total	528.95	459.98	988.93	630.69	1 619.63

Table B4-GDP Multiplier (Transport)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.00	0.00	0.01	0.00	0.01
Deciduous Fruit Farming	0.00	0.00	0.01	0.00	0.01
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.02	0.01	0.03	0.02	0.04
Livestock Farming	0.02	0.02	0.03	0.02	0.05
Game Farming	0.00	0.00	0.00	0.00	0.00
Dairy Farming (milk only)	0.01	0.01	0.01	0.01	0.02
Forestry	0.75	0.46	1.21	0.76	1.96
Fishing	0.00	0.00	0.01	0.00	0.01
Cereal and Crop Farming	0.02	0.04	0.06	0.04	0.09
Poultry Farming	0.06	0.04	0.09	0.06	0.15
Other Agriculture	0.10	0.07	0.17	0.11	0.28
Gold	0.01	0.00	0.01	0.01	0.01
Coal and lignite	3.23	0.94	4.17	2.70	6.87
Other Mining	5.69	4.21	9.89	6.42	16.31
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.03	0.18	0.21	0.14	0.35
Dairy products	0.11	0.26	0.37	0.24	0.61
Grain Mill, Bakery and Animal Feed Products	0.08	0.20	0.28	0.18	0.46
Other food products	0.19	0.16	0.35	0.23	0.58
Beverages and tobacco products	0.45	0.39	0.84	0.56	1.40
Textiles, Clothing, Leather Products and Footwear	2.41	3.54	5.95	3.93	9.88
Wood and Wood Products	1.10	1.26	2.36	1.55	3.91
Furniture	3.78	3.64	7.42	4.96	12.38

Paper and Paper Products	2.63	4.36	6.99	4.60	11.59
Publishing and Printing	1.52	0.92	2.43	1.65	4.09
Chemicals & Chemical Products (incl Plastic Products)	34.30	57.51	91.81	61.42	153.22
Rubber Products	2.35	3.36	5.71	3.78	9.49
Non-Metallic Mineral Products	1.83	1.89	3.72	2.46	6.18
Basic Metal Products	1.97	5.27	7.25	4.81	12.06
Structural Metal Products	0.23	0.29	0.52	0.34	0.86
Other Fabricated Metal Products	1.85	2.53	4.39	2.92	7.31
Machinery & Equipment	2.78	5.03	7.81	5.22	13.03
Electrical Machinery & Apparatus	1.49	2.21	3.69	2.46	6.16
Communication, Medical and other Electronic Equipment	0.56	0.62	1.18	0.78	1.96
Manufacturing of Transport Equipment	4.30	9.26	13.56	9.14	22.70
Other Manufacturing & Recycling	1.76	0.80	2.56	1.74	4.30
Electricity	7.10	5.34	12.44	8.04	20.48
Water	0.24	0.33	0.57	0.37	0.93
Building & Construction	2.55	5.60	8.14	5.65	13.80
Trade	9.74	6.69	16.43	10.93	27.37
Accommodation	1.72	3.17	4.89	3.17	8.05
Transport	218.35	186.62	404.97	262.44	667.41
Communication	10.18	9.36	19.53	12.65	32.18
Finance & Insurance	18.03	5.60	23.63	14.20	37.83
Real Estate	8.07	13.48	21.55	13.35	34.89
Business Services	72.26	7.30	79.56	47.28	126.85
General Government Services	-	-	-	-	-
Community, Social and Personal Services	41.23	17.08	58.30	40.37	98.67
Total	465.07	370.04	835.11	541.70	1 376.81

Table B5-GDP Multiplier (Communication)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.01	0.00	0.01	0.01	0.02
Deciduous Fruit Farming	0.01	0.01	0.02	0.01	0.03
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.06	0.04	0.09	0.06	0.15
Livestock Farming	0.03	0.03	0.06	0.04	0.09
Game Farming	0.00	0.00	0.00	0.00	0.01
Dairy Farming (milk only)	0.01	0.01	0.03	0.02	0.04
Forestry	0.58	0.36	0.94	0.59	1.52
Fishing	0.01	0.01	0.01	0.01	0.02
Cereal and Crop Farming	0.03	0.07	0.10	0.06	0.17
Poultry Farming	0.13	0.08	0.21	0.13	0.34
Other Agriculture	0.13	0.09	0.22	0.14	0.36
Gold	0.00	0.00	0.00	0.00	0.01
Coal and lignite	2.68	0.78	3.46	2.24	5.70
Other Mining	3.40	2.51	5.91	3.84	9.75
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.05	0.35	0.41	0.26	0.67
Dairy products	0.22	0.49	0.71	0.46	1.18
Grain Mill, Bakery and Animal Feed Products	0.15	0.39	0.54	0.35	0.89
Other food products	0.36	0.31	0.67	0.44	1.11
Beverages and tobacco products	0.87	0.77	1.64	1.08	2.72
Textiles, Clothing, Leather Products and Footwear	3.38	4.96	8.34	5.50	13.84
Wood and Wood Products	0.81	0.92	1.73	1.14	2.87
Furniture	3.67	3.54	7.21	4.82	12.02

Paper and Paper Products	2.11	3.49	5.60	3.68	9.28
Publishing and Printing	4.72	2.86	7.58	5.15	12.73
Chemicals & Chemical Products (incl Plastic Products)	12.76	21.40	34.16	22.85	57.01
Rubber Products	0.62	0.88	1.50	0.99	2.49
Non-Metallic Mineral Products	0.98	1.02	2.00	1.32	3.32
Basic Metal Products	3.67	9.79	13.46	8.94	22.40
Structural Metal Products	0.11	0.14	0.25	0.17	0.42
Other Fabricated Metal Products	1.17	1.60	2.77	1.84	4.61
Machinery & Equipment	5.37	9.71	15.09	10.10	25.18
Electrical Machinery & Apparatus	1.35	2.01	3.36	2.24	5.60
Communication, Medical and other Electronic Equipment	10.97	12.09	23.06	15.34	38.40
Manufacturing of Transport Equipment	1.15	2.47	3.62	2.44	6.07
Other Manufacturing & Recycling	0.60	0.27	0.88	0.60	1.47
Electricity	7.26	5.46	12.72	8.22	20.94
Water	0.19	0.26	0.45	0.29	0.74
Building & Construction	0.94	2.07	3.01	2.09	5.11
Trade	10.89	7.48	18.36	12.22	30.58
Accommodation	8.60	15.91	24.51	15.88	40.39
Transport	18.64	15.93	34.58	22.41	56.99
Communication	275.42	253.22	528.64	342.32	870.96
Finance & Insurance	15.17	4.71	19.88	11.95	31.82
Real Estate	2.12	3.54	5.66	3.50	9.16
Business Services	49.87	5.04	54.91	32.63	87.54
General Government Services	-	-	-	-	-
Community, Social and Personal Services	12.28	5.09	17.37	12.03	29.40
Total	463.55	402.18	865.73	560.39	1 426.11

Table B6-GDP Multiplier (Finance and Insurance)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.00	0.00	0.00	0.00	0.00
Deciduous Fruit Farming	0.00	0.00	0.00	0.00	0.00
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.01	0.00	0.01	0.01	0.02
Livestock Farming	0.01	0.00	0.01	0.01	0.02
Game Farming	0.00	0.00	0.00	0.00	0.00
Dairy Farming (milk only)	0.00	0.00	0.00	0.00	0.01
Forestry	0.38	0.23	0.61	0.38	0.99
Fishing	0.00	0.00	0.00	0.00	0.00
Cereal and Crop Farming	0.01	0.01	0.02	0.01	0.03
Poultry Farming	0.02	0.01	0.03	0.02	0.05
Other Agriculture	0.02	0.02	0.04	0.03	0.07
Gold	0.00	0.00	0.00	0.00	0.01
Coal and lignite	0.61	0.18	0.79	0.51	1.30
Other Mining	0.86	0.63	1.49	0.97	2.46
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.01	0.05	0.06	0.04	0.10
Dairy products	0.03	0.07	0.10	0.07	0.17
Grain Mill, Bakery and Animal Feed Products	0.02	0.06	0.08	0.05	0.13
Other food products	0.05	0.04	0.10	0.06	0.16
Beverages and tobacco products	0.12	0.11	0.23	0.15	0.38
Textiles, Clothing, Leather Products and Footwear	0.40	0.58	0.98	0.65	1.63
Wood and Wood Products	0.42	0.48	0.89	0.59	1.48
Furniture	3.41	3.28	6.69	4.47	11.17

Paper and Paper Products	1.59	2.63	4.22	2.78	7.00
Publishing and Printing	2.34	1.42	3.75	2.54	6.30
Chemicals & Chemical Products (incl Plastic Products)	3.45	5.79	9.24	6.18	15.42
Rubber Products	0.25	0.36	0.61	0.40	1.01
Non-Metallic Mineral Products	0.47	0.48	0.95	0.63	1.58
Basic Metal Products	0.40	1.08	1.48	0.98	2.46
Structural Metal Products	0.10	0.13	0.23	0.15	0.38
Other Fabricated Metal Products	0.37	0.51	0.88	0.58	1.46
Machinery & Equipment	0.60	1.08	1.68	1.12	2.80
Electrical Machinery & Apparatus	0.22	0.33	0.55	0.36	0.91
Communication, Medical and other Electronic Equipment	0.18	0.20	0.37	0.25	0.62
Manufacturing of Transport Equipment	0.47	1.02	1.49	1.00	2.50
Other Manufacturing & Recycling	0.64	0.29	0.93	0.63	1.57
Electricity	1.58	1.19	2.78	1.80	4.57
Water	0.08	0.11	0.18	0.12	0.30
Building & Construction	1.01	2.23	3.24	2.25	5.49
Trade	2.82	1.94	4.75	3.16	7.91
Accommodation	0.66	1.23	1.89	1.22	3.11
Transport	3.88	3.32	7.20	4.67	11.87
Communication	3.93	3.62	7.55	4.89	12.44
Finance & Insurance	535.19	166.21	701.40	421.50	1 122.90
Real Estate	12.58	21.01	33.60	20.81	54.40
Business Services	46.57	4.71	51.28	30.47	81.75
General Government Services	-	-	-	-	-
Community, Social and Personal Services	40.86	16.92	57.78	40.00	97.78
Total	666.63	243.54	910.17	556.53	1 466.70

Table B7-GDP Multiplier (Real Estate)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.00	0.00	0.00	0.00	0.01
Deciduous Fruit Farming	0.00	0.00	0.01	0.00	0.01
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.02	0.01	0.03	0.02	0.05
Livestock Farming	0.01	0.01	0.03	0.02	0.05
Game Farming	0.00	0.00	0.00	0.00	0.00
Dairy Farming (milk only)	0.00	0.01	0.01	0.01	0.02
Forestry	0.82	0.51	1.33	0.83	2.16
Fishing	0.00	0.00	0.01	0.00	0.01
Cereal and Crop Farming	0.02	0.03	0.05	0.03	0.08
Poultry Farming	0.06	0.03	0.09	0.06	0.15
Other Agriculture	0.07	0.05	0.12	0.07	0.19
Gold	0.00	0.00	0.01	0.00	0.01
Coal and lignite	2.20	0.64	2.84	1.84	4.68
Other Mining	3.29	2.44	5.73	3.72	9.45
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.02	0.15	0.17	0.11	0.28
Dairy products	0.09	0.21	0.30	0.20	0.50
Grain Mill, Bakery and Animal Feed Products	0.06	0.17	0.23	0.15	0.38
Other food products	0.15	0.13	0.28	0.19	0.47
Beverages and tobacco products	0.36	0.32	0.68	0.45	1.13
Textiles, Clothing, Leather Products and Footwear	1.36	2.00	3.36	2.21	5.57
Wood and Wood Products	1.79	2.05	3.84	2.52	6.36
Furniture	6.32	6.09	12.42	8.30	20.71

Paper and Paper Products	1.88	3.12	5.00	3.29	8.28
Publishing and Printing	3.21	1.95	5.16	3.50	8.66
Chemicals & Chemical Products (incl Plastic Products)	12.30	20.62	32.92	22.02	54.94
Rubber Products	0.40	0.57	0.98	0.65	1.62
Non-Metallic Mineral Products	3.94	4.08	8.02	5.31	13.33
Basic Metal Products	1.52	4.06	5.58	3.71	9.29
Structural Metal Products	0.89	1.10	1.99	1.32	3.31
Other Fabricated Metal Products	1.65	2.26	3.91	2.60	6.51
Machinery & Equipment	1.95	3.53	5.49	3.67	9.16
Electrical Machinery & Apparatus	1.38	2.04	3.42	2.28	5.70
Communication, Medical and other Electronic Equipment	0.50	0.55	1.05	0.70	1.75
Manufacturing of Transport Equipment	0.78	1.67	2.45	1.65	4.10
Other Manufacturing & Recycling	1.02	0.46	1.48	1.01	2.49
Electricity	5.17	3.89	9.06	5.86	14.91
Water	0.41	0.58	1.00	0.64	1.63
Building & Construction	8.90	19.55	28.45	19.75	48.20
Trade	8.85	6.08	14.93	9.93	24.87
Accommodation	1.89	3.49	5.37	3.48	8.85
Transport	8.02	6.85	14.87	9.63	24.50
Communication	11.19	10.29	21.47	13.90	35.38
Finance & Insurance	117.93	36.62	154.55	92.87	247.42
Real Estate	168.18	280.81	449.00	278.09	727.08
Business Services	86.15	8.71	94.86	56.37	151.23
General Government Services	-	-	-	-	-
Community, Social and Personal Services	66.58	27.58	94.15	65.18	159.34
Total	531.35	465.33	996.69	628.16	1 624.85

Table B8-GDP Multiplier (Business Services)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.00	0.00	0.00	0.00	0.01
Deciduous Fruit Farming	0.00	0.00	0.01	0.00	0.01
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.01	0.01	0.02	0.01	0.03
Livestock Farming	0.02	0.02	0.04	0.03	0.06
Game Farming	0.00	0.00	0.00	0.00	0.01
Dairy Farming (milk only)	0.01	0.01	0.01	0.01	0.02
Forestry	0.26	0.16	0.43	0.27	0.69
Fishing	0.01	0.01	0.01	0.01	0.02
Cereal and Crop Farming	0.02	0.05	0.07	0.04	0.11
Poultry Farming	0.06	0.04	0.10	0.06	0.15
Other Agriculture	0.06	0.04	0.10	0.06	0.16
Gold	0.00	0.00	0.00	0.00	0.01
Coal and lignite	0.38	0.11	0.49	0.32	0.82
Other Mining	0.80	0.59	1.39	0.90	2.29
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.01	0.09	0.10	0.07	0.17
Dairy products	0.05	0.12	0.18	0.12	0.30
Grain Mill, Bakery and Animal Feed Products	0.04	0.10	0.14	0.09	0.23
Other food products	0.09	0.08	0.17	0.11	0.28
Beverages and tobacco products	0.22	0.19	0.41	0.27	0.68
Textiles, Clothing, Leather Products and Footwear	0.29	0.43	0.72	0.47	1.19
Wood and Wood Products	0.26	0.30	0.56	0.37	0.93
Furniture	2.02	1.94	3.96	2.65	6.61

Paper and Paper Products	1.00	1.66	2.66	1.75	4.41
Publishing and Printing	0.93	0.56	1.50	1.01	2.51
Chemicals & Chemical Products (incl Plastic Products)	2.48	4.16	6.63	4.44	11.07
Rubber Products	0.12	0.17	0.29	0.19	0.47
Non-Metallic Mineral Products	0.36	0.37	0.73	0.48	1.21
Basic Metal Products	0.36	0.97	1.33	0.88	2.21
Structural Metal Products	0.09	0.12	0.21	0.14	0.35
Other Fabricated Metal Products	0.26	0.35	0.61	0.41	1.02
Machinery & Equipment	0.53	0.96	1.49	1.00	2.49
Electrical Machinery & Apparatus	0.17	0.25	0.42	0.28	0.70
Communication, Medical and other Electronic Equipment	0.20	0.22	0.41	0.27	0.68
Manufacturing of Transport Equipment	0.31	0.67	0.98	0.66	1.64
Other Manufacturing & Recycling	0.72	0.33	1.05	0.71	1.76
Electricity	0.69	0.52	1.21	0.78	1.99
Water	0.02	0.03	0.06	0.04	0.09
Building & Construction	0.46	1.01	1.47	1.02	2.49
Trade	1.93	1.32	3.25	2.16	5.42
Accommodation	0.70	1.30	2.00	1.30	3.30
Transport	3.78	3.23	7.02	4.55	11.56
Communication	4.17	3.83	7.99	5.18	13.17
Finance & Insurance	5.11	1.59	6.70	4.02	10.72
Real Estate	1.10	1.83	2.93	1.81	4.74
Business Services	778.62	78.69	857.31	509.50	1 366.81
General Government Services	-	-	-	-	-
Community, Social and Personal Services	12.27	5.08	17.35	12.01	29.37
Total	821.00	113.51	934.51	560.46	1 494.97

Table B9-GDP Multiplier (Community, Social and Personal Services)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.00	0.00	0.01	0.00	0.01
Deciduous Fruit Farming	0.00	0.00	0.01	0.00	0.01
Subtropical Fruit Farming	0.00	0.00	0.00	0.00	0.00
Vegetable Farming	0.02	0.01	0.03	0.02	0.05
Livestock Farming	0.01	0.01	0.02	0.02	0.04
Game Farming	0.00	0.00	0.00	0.00	0.00
Dairy Farming (milk only)	0.01	0.01	0.01	0.01	0.02
Forestry	0.46	0.28	0.74	0.47	1.21
Fishing	0.00	0.00	0.01	0.00	0.01
Cereal and Crop Farming	0.01	0.03	0.04	0.03	0.07
Poultry Farming	0.07	0.04	0.11	0.07	0.18
Other Agriculture	0.06	0.04	0.10	0.06	0.16
Gold	0.01	0.00	0.01	0.01	0.01
Coal and lignite	1.29	0.38	1.66	1.07	2.74
Other Mining	1.66	1.23	2.88	1.87	4.76
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.02	0.14	0.16	0.10	0.27
Dairy products	0.09	0.20	0.28	0.18	0.47
Grain Mill, Bakery and Animal Feed Products	0.06	0.16	0.22	0.14	0.36
Other food products	0.14	0.12	0.27	0.18	0.44
Beverages and tobacco products	0.34	0.30	0.64	0.42	1.07
Textiles, Clothing, Leather Products and Footwear	0.93	1.36	2.29	1.51	3.79
Wood and Wood Products	0.61	0.70	1.32	0.87	2.19
Furniture	4.00	3.85	7.85	5.25	13.09

Paper and Paper Products	1.75	2.90	4.64	3.05	7.70
Publishing and Printing	1.62	0.98	2.60	1.77	4.37
Chemicals & Chemical Products (incl Plastic Products)	6.95	11.65	18.59	12.44	31.03
Rubber Products	1.70	2.43	4.13	2.73	6.86
Non-Metallic Mineral Products	0.57	0.59	1.15	0.76	1.92
Basic Metal Products	1.01	2.70	3.71	2.46	6.17
Structural Metal Products	0.09	0.11	0.21	0.14	0.34
Other Fabricated Metal Products	1.08	1.48	2.57	1.71	4.28
Machinery & Equipment	1.54	2.79	4.33	2.90	7.22
Electrical Machinery & Apparatus	0.31	0.46	0.77	0.52	1.29
Communication, Medical and other Electronic Equipment	0.34	0.37	0.70	0.47	1.17
Manufacturing of Transport Equipment	2.77	5.96	8.73	5.88	14.62
Other Manufacturing & Recycling	1.68	0.76	2.44	1.66	4.11
Electricity	2.48	1.86	4.34	2.81	7.15
Water	0.10	0.13	0.23	0.15	0.38
Building & Construction	0.77	1.70	2.47	1.72	4.19
Trade	4.19	2.88	7.07	4.71	11.78
Accommodation	0.96	1.78	2.75	1.78	4.53
Transport	5.42	4.63	10.05	6.51	16.56
Communication	5.72	5.26	10.98	7.11	18.10
Finance & Insurance	5.76	1.79	7.55	4.54	12.09
Real Estate	1.52	2.53	4.05	2.51	6.56
Business Services	45.20	4.57	49.76	29.57	79.34
General Government Services	-	-	-	-	-
Community, Social and Personal Services	501.79	207.83	709.62	491.29	1 200.91
Total	605.10	277.03	882.13	601.46	1 483.59

Annexure C

Labour multiplier results for each services sector

Table C1-Labour Multiplier (Building and Construction)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.05	0.02	0.06	0.02	0.08
Deciduous Fruit Farming	0.08	0.02	0.10	0.03	0.14
Subtropical Fruit Farming	0.02	0.00	0.02	0.01	0.03
Vegetable Farming	0.28	0.09	0.38	0.12	0.50
Livestock Farming	0.30	0.15	0.45	0.16	0.60
Game Farming	0.03	0.01	0.04	0.01	0.05
Dairy Farming (milk only)	0.09	0.06	0.16	0.06	0.21
Forestry	28.14	9.47	37.61	12.57	50.18
Fishing	0.04	0.04	0.07	0.04	0.11
Cereal and Crop Farming	0.32	0.33	0.66	0.28	0.93
Poultry Farming	1.05	0.26	1.30	0.43	1.73
Other Agriculture	1.52	0.46	1.98	0.64	2.62
Gold	0.01	0.01	0.02	0.01	0.03
Coal and lignite	7.50	6.93	14.43	22.02	36.45
Other Mining	51.31	71.44	122.75	124.74	247.50
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.08	1.40	1.49	0.83	2.32
Dairy products	0.34	2.02	2.37	1.47	3.84
Grain Mill, Bakery and Animal Feed Products	0.24	1.69	1.93	1.12	3.05
Other food products	0.57	0.98	1.55	1.40	2.95
Beverages and tobacco products	1.29	2.67	3.97	3.20	7.17
Textiles, Clothing, Leather Products and Footwear	39.15	25.74	64.89	23.73	88.62

Wood and Wood Products	34.04	56.90	90.94	51.15	142.09
Furniture	14.40	28.05	42.45	40.33	82.79
Paper and Paper Products	12.77	26.21	38.98	23.79	62.77
Publishing and Printing	11.16	8.24	19.40	12.96	32.36
Chemicals & Chemical Products (incl Plastic Products)	49.74	198.70	248.44	243.11	491.55
Rubber Products	1.13	4.28	5.41	4.96	10.37
Non-Metallic Mineral Products	134.96	159.27	294.23	222.81	517.04
Basic Metal Products	30.50	94.35	124.85	114.34	239.18
Structural Metal Products	36.47	56.89	93.35	83.44	176.79
Other Fabricated Metal Products	6.21	10.92	17.13	15.04	32.17
Machinery & Equipment	25.20	66.43	91.63	72.72	164.35
Electrical Machinery & Apparatus	50.65	72.29	122.94	85.13	208.07
Communication, Medical and other Electronic Equipment	2.95	4.08	7.04	5.83	12.86
Manufacturing of Transport Equipment	4.28	11.55	15.83	13.59	29.43
Other Manufacturing & Recycling	1.46	1.19	2.65	3.09	5.74
Electricity	10.53	20.77	31.30	42.05	73.35
Water	0.24	1.02	1.25	1.61	2.87
Building & Construction	1 695.52	2 196.05	3 891.58	2 100.15	5 991.73
Trade	171.08	113.72	284.80	192.22	477.02
Accommodation	37.24	27.79	65.03	24.76	89.79
Transport	62.80	99.70	162.50	139.02	301.51
Communication	19.17	60.63	79.80	99.05	178.85
Finance & Insurance	38.85	39.51	78.37	91.47	169.84
Real Estate	2.79	54.49	57.28	55.36	112.64
Business Services	1 039.43	78.33	1 117.76	447.17	1 564.94

General Government Services	-	-	-	-	-
Community, Social and Personal Services	267.99	79.44	347.42	134.83	482.25
Total	3 893.99	3 694.59	7 588.58	4 512.86	12 101.44

Table C2-Labour Multiplier (Trade)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.08	0.03	0.11	0.04	0.14
Deciduous Fruit Farming	0.15	0.04	0.19	0.06	0.25
Subtropical Fruit Farming	0.03	0.01	0.04	0.01	0.05
Vegetable Farming	0.54	0.18	0.72	0.24	0.96
Livestock Farming	0.56	0.27	0.83	0.29	1.12
Game Farming	0.05	0.02	0.07	0.02	0.09
Dairy Farming (milk only)	0.18	0.12	0.29	0.11	0.40
Forestry	13.84	4.66	18.50	6.18	24.68
Fishing	0.07	0.08	0.15	0.08	0.23
Cereal and Crop Farming	0.60	0.62	1.22	0.51	1.73
Poultry Farming	1.95	0.48	2.42	0.80	3.22
Other Agriculture	2.13	0.64	2.78	0.90	3.68
Gold	0.01	0.01	0.02	0.01	0.04
Coal and lignite	3.64	3.36	7.00	10.68	17.68
Other Mining	8.74	12.16	20.90	21.24	42.14
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.14	2.29	2.43	1.36	3.79
Dairy products	0.56	3.31	3.87	2.40	6.28
Grain Mill, Bakery and Animal Feed Products	0.39	2.74	3.13	1.83	4.96
Other food products	0.94	1.60	2.53	2.29	4.82
Beverages and tobacco products	2.23	4.62	6.85	5.53	12.38
Textiles, Clothing, Leather Products and Footwear	26.03	17.12	43.15	15.78	58.93
Wood and Wood Products	6.77	11.31	18.08	10.17	28.25
Furniture	19.59	38.15	57.74	54.86	112.60

Paper and Paper Products	23.23	47.66	70.89	43.26	114.16
Publishing and Printing	16.63	12.28	28.90	19.31	48.22
Chemicals & Chemical Products (incl Plastic Products)	32.02	127.93	159.96	156.53	316.49
Rubber Products	1.60	6.04	7.64	7.00	14.64
Non-Metallic Mineral Products	6.85	8.08	14.94	11.31	26.24
Basic Metal Products	6.14	18.99	25.13	23.02	48.15
Structural Metal Products	1.40	2.18	3.59	3.20	6.79
Other Fabricated Metal Products	4.26	7.49	11.75	10.31	22.06
Machinery & Equipment	11.73	30.91	42.63	33.84	76.47
Electrical Machinery & Apparatus	4.78	6.82	11.60	8.03	19.64
Communication, Medical and other Electronic Equipment	4.69	6.49	11.18	9.26	20.44
Manufacturing of Transport Equipment	5.78	15.58	21.36	18.33	39.69
Other Manufacturing & Recycling	1.99	1.62	3.61	4.22	7.83
Electricity	9.55	18.84	28.38	38.13	66.52
Water	0.24	1.02	1.26	1.62	2.88
Building & Construction	38.42	49.76	88.17	47.58	135.76
Trade	521.77	346.84	868.60	586.24	1 454.84
Accommodation	71.85	53.63	125.47	47.78	173.25
Transport	73.79	117.15	190.93	163.34	354.27
Communication	36.99	116.99	153.98	191.11	345.10
Finance & Insurance	65.09	66.20	131.29	153.24	284.53
Real Estate	3.80	74.40	78.20	75.59	153.79
Business Services	1 166.04	87.88	1 253.92	501.64	1 755.56
General Government Services	-	-	-	-	-
Community, Social and Personal Services	195.88	58.06	253.94	98.55	352.48
Total	2 393.73	1 386.64	3 780.38	2 387.85	6 168.23

Table C3-Labour Multiplier (Accommodation)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	1.61	0.62	2.23	0.76	2.99
Deciduous Fruit Farming	2.65	0.73	3.38	1.06	4.44
Subtropical Fruit Farming	0.53	0.11	0.64	0.20	0.84
Vegetable Farming	16.77	5.43	22.20	7.27	29.47
Livestock Farming	7.11	3.42	10.53	3.64	14.17
Game Farming	0.61	0.27	0.88	0.30	1.18
Dairy Farming (milk only)	3.01	2.00	5.01	1.83	6.84
Forestry	12.52	4.21	16.74	5.59	22.33
Fishing	0.63	0.70	1.33	0.70	2.03
Cereal and Crop Farming	7.60	7.80	15.41	6.50	21.91
Poultry Farming	35.51	8.70	44.22	14.55	58.76
Other Agriculture	28.86	8.71	37.57	12.20	49.77
Gold	0.02	0.01	0.03	0.02	0.05
Coal and lignite	10.15	9.38	19.53	29.80	49.32
Other Mining	9.22	12.83	22.05	22.41	44.46
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	2.90	47.94	50.84	28.43	79.26
Dairy products	11.78	69.21	80.99	50.24	131.23
Grain Mill, Bakery and Animal Feed Products	8.09	56.90	64.99	37.90	102.89
Other food products	19.55	33.38	52.92	47.77	100.69
Beverages and tobacco products	47.72	98.60	146.32	118.16	264.49
Textiles, Clothing, Leather Products and Footwear	22.33	14.68	37.01	13.53	50.54
Wood and Wood Products	8.07	13.49	21.57	12.13	33.69
Furniture	17.95	34.97	52.92	50.28	103.19

Paper and Paper Products	17.10	35.08	52.18	31.84	84.03
Publishing and Printing	11.75	8.67	20.42	13.64	34.06
Chemicals & Chemical Products (incl Plastic Products)	28.07	112.14	140.20	137.20	277.40
Rubber Products	0.98	3.71	4.69	4.30	8.99
Non-Metallic Mineral Products	16.21	19.13	35.35	26.77	62.12
Basic Metal Products	6.45	19.95	26.39	24.17	50.56
Structural Metal Products	1.11	1.74	2.85	2.55	5.40
Other Fabricated Metal Products	7.05	12.39	19.45	17.07	36.52
Machinery & Equipment	11.47	30.23	41.70	33.09	74.79
Electrical Machinery & Apparatus	6.86	9.78	16.64	11.52	28.16
Communication, Medical and other Electronic Equipment	2.72	3.77	6.49	5.38	11.87
Manufacturing of Transport Equipment	3.34	8.99	12.33	10.58	22.91
Other Manufacturing & Recycling	2.69	2.19	4.87	5.69	10.56
Electricity	41.68	82.23	123.90	166.47	290.37
Water	1.37	5.88	7.26	9.32	16.58
Building & Construction	34.15	44.24	78.39	42.30	120.70
Trade	78.97	52.49	131.47	88.73	220.20
Accommodation	3 049.28	2 275.96	5 325.25	2 028.01	7 353.25
Transport	42.95	68.19	111.13	95.07	206.21
Communication	20.97	66.31	87.27	108.32	195.59
Finance & Insurance	59.83	60.84	120.67	140.85	261.52
Real Estate	2.46	48.21	50.67	48.98	99.65
Business Services	2 240.47	168.85	2 409.32	963.87	3 373.20
General Government Services	-	-	-	-	-
Community, Social and Personal Services	297.88	88.30	386.17	149.87	536.04
Total	6 261.00	3 663.37	9 924.37	4 630.86	14 555.23

Table C4-Labour Multiplier (Transport)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.05	0.02	0.07	0.03	0.10
Deciduous Fruit Farming	0.08	0.02	0.10	0.03	0.14
Subtropical Fruit Farming	0.02	0.00	0.02	0.01	0.03
Vegetable Farming	0.28	0.09	0.37	0.12	0.49
Livestock Farming	0.30	0.14	0.44	0.15	0.60
Game Farming	0.03	0.01	0.04	0.01	0.05
Dairy Farming (milk only)	0.09	0.06	0.16	0.06	0.22
Forestry	12.48	4.20	16.69	5.57	22.26
Fishing	0.03	0.03	0.07	0.03	0.10
Cereal and Crop Farming	0.32	0.33	0.65	0.27	0.92
Poultry Farming	1.06	0.26	1.31	0.43	1.75
Other Agriculture	1.87	0.56	2.44	0.79	3.23
Gold	0.04	0.02	0.07	0.04	0.11
Coal and lignite	6.81	6.29	13.11	20.00	33.11
Other Mining	19.54	27.20	46.74	47.50	94.24
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.10	1.70	1.80	1.01	2.81
Dairy products	0.42	2.45	2.87	1.78	4.65
Grain Mill, Bakery and Animal Feed Products	0.28	2.00	2.28	1.33	3.61
Other food products	0.69	1.18	1.87	1.69	3.56
Beverages and tobacco products	1.65	3.40	5.05	4.08	9.13
Textiles, Clothing, Leather Products and Footwear	47.59	31.29	78.88	28.85	107.73
Wood and Wood Products	7.59	12.68	20.27	11.40	31.67
Furniture	13.02	25.36	38.38	36.47	74.85

Paper and Paper Products	18.15	37.23	55.38	33.80	89.18
Publishing and Printing	10.46	7.72	18.18	12.15	30.32
Chemicals & Chemical Products (incl Plastic Products)	92.45	369.36	461.81	451.92	913.73
Rubber Products	6.34	23.94	30.28	27.75	58.03
Non-Metallic Mineral Products	10.95	12.92	23.87	18.08	41.95
Basic Metal Products	9.46	29.26	38.71	35.45	74.17
Structural Metal Products	1.10	1.72	2.82	2.52	5.34
Other Fabricated Metal Products	8.87	15.58	24.45	21.46	45.92
Machinery & Equipment	13.31	35.10	48.41	38.42	86.83
Electrical Machinery & Apparatus	10.78	15.39	26.16	18.12	44.28
Communication, Medical and other Electronic Equipment	2.92	4.04	6.95	5.76	12.72
Manufacturing of Transport Equipment	21.18	57.12	78.31	67.22	145.53
Other Manufacturing & Recycling	6.05	4.93	10.98	12.82	23.80
Electricity	14.82	29.24	44.06	59.20	103.26
Water	0.40	1.70	2.09	2.69	4.78
Building & Construction	33.65	43.58	77.22	41.67	118.90
Trade	71.57	47.57	119.14	80.41	199.54
Accommodation	34.97	26.10	61.08	23.26	84.34
Transport	871.77	1 384.08	2 255.86	1 929.87	4 185.73
Communication	18.01	56.95	74.96	93.03	167.99
Finance & Insurance	44.15	44.90	89.05	103.94	192.99
Real Estate	4.92	96.27	101.19	97.81	199.00
Business Services	804.08	60.60	864.68	345.92	1 210.60
General Government Services	-	-	-	-	-
Community, Social and Personal Services	589.70	174.80	764.49	296.68	1 061.17
Total	2 814.41	2 699.42	5 513.83	3 981.60	9 495.42

Table C5-Labour Multiplier (Communication)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.11	0.04	0.15	0.05	0.20
Deciduous Fruit Farming	0.18	0.05	0.23	0.07	0.30
Subtropical Fruit Farming	0.04	0.01	0.04	0.01	0.06
Vegetable Farming	1.01	0.33	1.33	0.44	1.77
Livestock Farming	0.52	0.25	0.77	0.27	1.04
Game Farming	0.04	0.02	0.06	0.02	0.09
Dairy Farming (milk only)	0.20	0.14	0.34	0.12	0.46
Forestry	9.68	3.26	12.94	4.32	17.27
Fishing	0.05	0.06	0.11	0.06	0.16
Cereal and Crop Farming	0.56	0.57	1.13	0.48	1.61
Poultry Farming	2.37	0.58	2.95	0.97	3.92
Other Agriculture	2.44	0.74	3.18	1.03	4.21
Gold	0.02	0.01	0.02	0.01	0.04
Coal and lignite	5.65	5.22	10.86	16.58	27.44
Other Mining	11.67	16.25	27.93	28.38	56.31
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.20	3.26	3.46	1.93	5.39
Dairy products	0.80	4.70	5.51	3.42	8.92
Grain Mill, Bakery and Animal Feed Products	0.55	3.86	4.41	2.57	6.99
Other food products	1.33	2.27	3.60	3.25	6.84
Beverages and tobacco products	3.21	6.64	9.85	7.95	17.81
Textiles, Clothing, Leather Products and Footwear	66.66	43.83	110.48	40.41	150.89
Wood and Wood Products	5.56	9.30	14.86	8.36	23.22
Furniture	12.64	24.62	37.26	35.40	72.66

Paper and Paper Products	14.53	29.82	44.36	27.07	71.42
Publishing and Printing	32.58	24.05	56.63	37.84	94.47
Chemicals & Chemical Products (incl Plastic Products)	34.40	137.44	171.84	168.16	340.00
Rubber Products	1.67	6.28	7.95	7.28	15.23
Non-Metallic Mineral Products	5.88	6.94	12.83	9.71	22.54
Basic Metal Products	17.57	54.34	71.90	65.85	137.75
Structural Metal Products	0.54	0.84	1.39	1.24	2.63
Other Fabricated Metal Products	5.60	9.84	15.44	13.55	28.99
Machinery & Equipment	25.73	67.82	93.55	74.25	167.80
Electrical Machinery & Apparatus	9.81	14.00	23.81	16.48	40.29
Communication, Medical and other Electronic Equipment	57.13	78.97	136.10	112.74	248.84
Manufacturing of Transport Equipment	5.66	15.26	20.92	17.96	38.88
Other Manufacturing & Recycling	2.08	1.69	3.77	4.40	8.16
Electricity	15.15	29.90	45.05	60.53	105.59
Water	0.31	1.34	1.66	2.13	3.79
Building & Construction	12.45	16.13	28.58	15.42	44.00
Trade	79.96	53.15	133.12	89.84	222.96
Accommodation	175.38	130.91	306.29	116.64	422.93
Transport	74.43	118.18	192.61	164.78	357.39
Communication	487.41	1 541.36	2 028.77	2 517.97	4 546.74
Finance & Insurance	37.14	37.77	74.90	87.43	162.33
Real Estate	1.29	25.28	26.57	25.68	52.25
Business Services	554.91	41.82	596.73	238.73	835.46
General Government Services	-	-	-	-	-
Community, Social and Personal Services	175.69	52.08	227.77	88.39	316.16
Total	1 952.80	2 621.21	4 574.01	4 120.19	8 694.20

Table C6-Labour Multiplier (Finance and Insurance)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.02	0.01	0.02	0.01	0.03
Deciduous Fruit Farming	0.03	0.01	0.04	0.01	0.05
Subtropical Fruit Farming	0.01	0.00	0.01	0.00	0.01
Vegetable Farming	0.11	0.03	0.14	0.05	0.19
Livestock Farming	0.09	0.04	0.14	0.05	0.18
Game Farming	0.01	0.00	0.01	0.00	0.02
Dairy Farming (milk only)	0.03	0.02	0.05	0.02	0.07
Forestry	6.32	2.13	8.44	2.82	11.27
Fishing	0.01	0.01	0.02	0.01	0.03
Cereal and Crop Farming	0.10	0.10	0.20	0.08	0.28
Poultry Farming	0.37	0.09	0.45	0.15	0.60
Other Agriculture	0.45	0.13	0.58	0.19	0.77
Gold	0.02	0.01	0.02	0.02	0.04
Coal and lignite	1.29	1.19	2.48	3.79	6.28
Other Mining	2.94	4.10	7.04	7.15	14.20
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.03	0.47	0.50	0.28	0.77
Dairy products	0.11	0.68	0.79	0.49	1.28
Grain Mill, Bakery and Animal Feed Products	0.08	0.56	0.64	0.37	1.01
Other food products	0.19	0.33	0.52	0.47	0.98
Beverages and tobacco products	0.44	0.92	1.36	1.10	2.46
Textiles, Clothing, Leather Products and Footwear	7.83	5.15	12.98	4.75	17.73
Wood and Wood Products	2.87	4.79	7.66	4.31	11.96
Furniture	11.74	22.87	34.61	32.89	67.50

Paper and Paper Products	10.96	22.48	33.44	20.41	53.85
Publishing and Printing	16.11	11.89	28.01	18.71	46.72
Chemicals & Chemical Products (incl Plastic Products)	9.30	37.16	46.46	45.46	91.93
Rubber Products	0.68	2.55	3.23	2.96	6.18
Non-Metallic Mineral Products	2.81	3.31	6.12	4.63	10.75
Basic Metal Products	1.93	5.98	7.91	7.24	15.15
Structural Metal Products	0.49	0.77	1.26	1.13	2.39
Other Fabricated Metal Products	1.78	3.12	4.90	4.30	9.20
Machinery & Equipment	2.86	7.53	10.39	8.25	18.64
Electrical Machinery & Apparatus	1.59	2.27	3.86	2.67	6.54
Communication, Medical and other Electronic Equipment	0.93	1.28	2.21	1.83	4.03
Manufacturing of Transport Equipment	2.33	6.28	8.61	7.39	16.00
Other Manufacturing & Recycling	2.21	1.80	4.01	4.68	8.68
Electricity	3.31	6.53	9.84	13.22	23.05
Water	0.13	0.54	0.67	0.86	1.53
Building & Construction	13.39	17.34	30.73	16.59	47.32
Trade	20.69	13.76	34.45	23.25	57.70
Accommodation	13.52	10.09	23.61	8.99	32.60
Transport	15.51	24.62	40.13	34.33	74.46
Communication	6.96	22.01	28.98	35.96	64.94
Finance & Insurance	1 310.35	1 332.59	2 642.94	3 084.87	5 727.81
Real Estate	7.67	150.11	157.79	152.50	310.29
Business Services	518.21	39.05	557.26	222.94	780.20
General Government Services	-	-	-	-	-
Community, Social and Personal Services	584.39	173.22	757.62	294.01	1 051.63
Total	2 583.18	1 939.93	4 523.11	4 076.18	8 599.29

Table C7-Labour Multiplier (Real Estate)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.05	0.02	0.07	0.02	0.09
Deciduous Fruit Farming	0.08	0.02	0.10	0.03	0.13
Subtropical Fruit Farming	0.02	0.00	0.02	0.01	0.02
Vegetable Farming	0.30	0.10	0.39	0.13	0.52
Livestock Farming	0.26	0.13	0.39	0.14	0.53
Game Farming	0.02	0.01	0.03	0.01	0.04
Dairy Farming (milk only)	0.09	0.06	0.15	0.05	0.20
Forestry	13.73	4.62	18.35	6.13	24.48
Fishing	0.03	0.03	0.06	0.03	0.09
Cereal and Crop Farming	0.28	0.29	0.57	0.24	0.82
Poultry Farming	1.00	0.25	1.25	0.41	1.66
Other Agriculture	1.28	0.39	1.67	0.54	2.21
Gold	0.03	0.01	0.04	0.03	0.06
Coal and lignite	4.64	4.29	8.93	13.63	22.56
Other Mining	11.32	15.76	27.08	27.52	54.60
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.08	1.39	1.47	0.82	2.29
Dairy products	0.34	2.00	2.34	1.45	3.79
Grain Mill, Bakery and Animal Feed Products	0.23	1.64	1.88	1.10	2.97
Other food products	0.57	0.96	1.53	1.38	2.91
Beverages and tobacco products	1.33	2.75	4.08	3.30	7.38
Textiles, Clothing, Leather Products and Footwear	26.85	17.65	44.50	16.27	60.77
Wood and Wood Products	12.34	20.63	32.97	18.55	51.52
Furniture	21.78	42.42	64.19	60.99	125.18

Paper and Paper Products	12.97	26.62	39.59	24.16	63.76
Publishing and Printing	22.17	16.36	38.53	25.74	64.27
Chemicals & Chemical Products (incl Plastic Products)	33.15	132.43	165.58	162.03	327.61
Rubber Products	1.08	4.09	5.18	4.74	9.92
Non-Metallic Mineral Products	23.64	27.90	51.54	39.03	90.56
Basic Metal Products	7.29	22.55	29.84	27.32	57.16
Structural Metal Products	4.24	6.61	10.85	9.70	20.55
Other Fabricated Metal Products	7.91	13.90	21.81	19.14	40.95
Machinery & Equipment	9.35	24.66	34.01	27.00	61.01
Electrical Machinery & Apparatus	9.98	14.24	24.22	16.77	40.99
Communication, Medical and other Electronic Equipment	2.60	3.60	6.20	5.14	11.34
Manufacturing of Transport Equipment	3.83	10.32	14.15	12.14	26.29
Other Manufacturing & Recycling	3.51	2.85	6.36	7.43	13.79
Electricity	10.79	21.30	32.09	43.11	75.21
Water	0.69	2.97	3.66	4.70	8.37
Building & Construction	117.56	152.26	269.81	145.61	415.42
Trade	65.03	43.23	108.26	73.07	181.33
Accommodation	38.45	28.70	67.15	25.57	92.72
Transport	32.00	50.81	82.81	70.84	153.65
Communication	19.80	62.61	82.41	102.28	184.68
Finance & Insurance	288.72	293.62	582.35	679.72	1 262.07
Real Estate	102.57	2 006.12	2 108.69	2 038.09	4 146.78
Business Services	958.64	72.25	1 030.89	412.42	1 443.30
General Government Services	-	-	-	-	-
Community, Social and Personal Services	952.26	282.27	1 234.53	479.09	1 713.62
Total	2 824.88	3 437.67	6 262.56	4 607.63	10 870.18

Table C8-Labour Multiplier (Business Services)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.03	0.01	0.04	0.01	0.06
Deciduous Fruit Farming	0.09	0.02	0.11	0.03	0.14
Subtropical Fruit Farming	0.02	0.00	0.02	0.01	0.03
Vegetable Farming	0.18	0.06	0.24	0.08	0.32
Livestock Farming	0.36	0.17	0.53	0.18	0.72
Game Farming	0.03	0.01	0.04	0.02	0.06
Dairy Farming (milk only)	0.10	0.07	0.16	0.06	0.22
Forestry	4.41	1.48	5.89	1.97	7.86
Fishing	0.05	0.06	0.11	0.06	0.17
Cereal and Crop Farming	0.38	0.39	0.78	0.33	1.11
Poultry Farming	1.06	0.26	1.32	0.44	1.76
Other Agriculture	1.07	0.32	1.39	0.45	1.84
Gold	0.02	0.01	0.03	0.02	0.05
Coal and lignite	0.81	0.75	1.55	2.37	3.93
Other Mining	2.75	3.82	6.57	6.67	13.24
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.05	0.82	0.87	0.49	1.35
Dairy products	0.20	1.18	1.38	0.86	2.24
Grain Mill, Bakery and Animal Feed Products	0.14	1.01	1.15	0.67	1.82
Other food products	0.33	0.57	0.90	0.82	1.72
Beverages and tobacco products	0.80	1.65	2.45	1.98	4.42
Textiles, Clothing, Leather Products and Footwear	5.75	3.78	9.53	3.49	13.02
Wood and Wood Products	1.81	3.03	4.85	2.73	7.57
Furniture	6.94	13.53	20.47	19.45	39.92

Paper and Paper Products	6.91	14.17	21.08	12.86	33.94
Publishing and Printing	6.42	4.74	11.16	7.46	18.62
Chemicals & Chemical Products (incl Plastic Products)	6.68	26.69	33.37	32.66	66.03
Rubber Products	0.32	1.20	1.52	1.39	2.90
Non-Metallic Mineral Products	2.15	2.54	4.69	3.55	8.24
Basic Metal Products	1.74	5.37	7.11	6.51	13.61
Structural Metal Products	0.45	0.71	1.16	1.04	2.20
Other Fabricated Metal Products	1.24	2.18	3.41	3.00	6.41
Machinery & Equipment	2.54	6.70	9.24	7.33	16.58
Electrical Machinery & Apparatus	1.23	1.75	2.97	2.06	5.03
Communication, Medical and other Electronic Equipment	1.02	1.41	2.43	2.01	4.44
Manufacturing of Transport Equipment	1.53	4.12	5.65	4.85	10.50
Other Manufacturing & Recycling	2.48	2.02	4.51	5.26	9.77
Electricity	1.44	2.84	4.28	5.75	10.02
Water	0.04	0.17	0.21	0.27	0.48
Building & Construction	6.06	7.85	13.91	7.51	21.42
Trade	14.16	9.41	23.57	15.91	39.48
Accommodation	14.32	10.69	25.00	9.52	34.52
Transport	15.10	23.98	39.08	33.43	72.51
Communication	7.37	23.31	30.68	38.08	68.76
Finance & Insurance	12.51	12.72	25.23	29.45	54.67
Real Estate	0.67	13.08	13.75	13.29	27.03
Business Services	8 664.17	652.96	9 317.13	3 727.41	13 044.54
General Government Services	-	-	-	-	-
Community, Social and Personal Services	175.51	52.02	227.53	88.30	315.83
Total	8 973.44	915.64	9 889.08	4 102.06	13 991.13

Table C9-Labour Multiplier (Community, Social and Personal Services)

Activities	Direct	Indirect	Direct + Indirect	Induced	Direct + Indirect + Induced
Citrus Fruit Farming	0.05	0.02	0.07	0.02	0.09
Deciduous Fruit Farming	0.09	0.02	0.11	0.04	0.15
Subtropical Fruit Farming	0.02	0.00	0.02	0.01	0.03
Vegetable Farming	0.31	0.10	0.41	0.14	0.55
Livestock Farming	0.22	0.10	0.32	0.11	0.43
Game Farming	0.02	0.01	0.03	0.01	0.04
Dairy Farming (milk only)	0.10	0.07	0.17	0.06	0.23
Forestry	7.68	2.59	10.27	3.43	13.70
Fishing	0.02	0.02	0.05	0.02	0.07
Cereal and Crop Farming	0.23	0.24	0.47	0.20	0.67
Poultry Farming	1.21	0.30	1.51	0.50	2.01
Other Agriculture	1.06	0.32	1.38	0.45	1.83
Gold	0.04	0.02	0.06	0.04	0.11
Coal and lignite	2.71	2.51	5.22	7.97	13.18
Other Mining	5.70	7.93	13.63	13.85	27.48
Meat, Fish, Fruit, Vegetables, Oils and Fat Products	0.08	1.29	1.37	0.77	2.14
Dairy products	0.32	1.87	2.18	1.36	3.54
Grain Mill, Bakery and Animal Feed Products	0.22	1.56	1.78	1.04	2.81
Other food products	0.53	0.90	1.43	1.29	2.72
Beverages and tobacco products	1.26	2.60	3.87	3.12	6.99
Textiles, Clothing, Leather Products and Footwear	18.27	12.01	30.28	11.07	41.35
Wood and Wood Products	4.24	7.09	11.33	6.37	17.71
Furniture	13.77	26.82	40.59	38.56	79.15

Paper and Paper Products	12.05	24.73	36.79	22.45	59.24
Publishing and Printing	11.18	8.25	19.44	12.99	32.42
Chemicals & Chemical Products (incl Plastic Products)	18.72	74.80	93.52	91.52	185.04
Rubber Products	4.58	17.30	21.88	20.05	41.94
Non-Metallic Mineral Products	3.40	4.01	7.41	5.61	13.01
Basic Metal Products	4.84	14.97	19.81	18.14	37.96
Structural Metal Products	0.44	0.68	1.12	1.00	2.13
Other Fabricated Metal Products	5.19	9.12	14.32	12.57	26.88
Machinery & Equipment	7.38	19.46	26.84	21.30	48.14
Electrical Machinery & Apparatus	2.25	3.22	5.47	3.79	9.26
Communication, Medical and other Electronic Equipment	1.75	2.41	4.16	3.44	7.60
Manufacturing of Transport Equipment	13.64	36.79	50.43	43.29	93.72
Other Manufacturing & Recycling	5.78	4.71	10.49	12.24	22.73
Electricity	5.17	10.21	15.38	20.67	36.05
Water	0.16	0.69	0.85	1.09	1.93
Building & Construction	10.21	13.23	23.44	12.65	36.09
Trade	30.81	20.48	51.28	34.61	85.90
Accommodation	19.67	14.68	34.35	13.08	47.43
Transport	21.63	34.34	55.97	47.88	103.86
Communication	10.13	32.02	42.15	52.32	94.47
Finance & Insurance	14.11	14.35	28.47	33.23	61.69
Real Estate	0.93	18.10	19.03	18.39	37.41
Business Services	502.91	37.90	540.81	216.36	757.17
General Government Services	-	-	-	-	-
Community, Social and Personal Services	7 177.20	2 127.43	9 304.63	3 610.91	12 915.54
Total	7 942.30	2 612.29	10 554.59	4 419.99	14 974.58

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