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The determination of Mpumalanga's competitive economic sectors for effective export promotion

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ABSTRACT

Research has shown that South African regions have been experiencing reasonable export growth, as well as growth in the gross domestic product (GDP), population and skills level. South Africa's provinces have been experiencing difficulties allocating resources for effective export enhancement and promotion. Through effective targeting of specific sectors and industries within the South African provinces, provincial government entities would be able to determine from which sector or industry they could gain the most through effective targeting of certain sectors. The overall focus of this study was on the Mpumalanga Province. By using the Revealed Comparative Advantage Index (RCA), the potential priority export products in each industry or sector in the Mpumalanga Province were determined. The products identified were matched to the export opportunities identified by the Decision Support Model (DSM) to determine if products are seen as viable export opportunities for the province. The composition of the Mpumalanga Province's economic activities and an economic profile was also determined and discussed. The three products with the highest potential export opportunities identified by the RCA and successfully matched to the DSM, were manganese products, salted bovine meat (beef) and tomatoes. These results concluded that products identified by the RCA and matched to the DSM, are potential export opportunities for the Mpumalanga Province and South Africa.

Key words: Trade, Export Promotion, Economic growth, Comparative Advantage, Decision Support Model (DSM), Revealed Comparative Advantage (RCA), South Africa, Mpumalanga Province

OPSOMMING

Navorsing het getoon dat Suid-Afrika se provinsies 'n redelike groei in uitvoer, sowel as groei in die bruto binnelandse produk (BBP), bevolking en vaardigheidsvlak ervaar het. Suid-Afrika se provinsies het egter probleme ondervind met die toekenning van hulpbronne vir die effektiewe verbetering en bevordering van uitvoer. Deur middel van effektiewe identifisering van spesifieke sektore en bedrywe in die Suid-Afrikaanse provinsies, sal provinsiale regeringsentiteite in staat wees om te bepaal watter sektore of industrieë ‘n mededingende voordeel het. Die oorkoepelende fokus van hierdie studie is gerig op die Mpumalanga Provinsie. Deur gebruik te maak van die “Revealed Comparative Advantage Index (RCA)”, is die potensiële prioriteitsprodukte in elke bedryf of sektor in die provinsie van Mpumalanga geïdentifiseer. Die produkte wat geïdentifiseer is, is vergelyk met uitvoergeleenthede wat deur die “Decision Support Model (DSM)” geïdentifiseer was, om te bepaal of produkte gesien word as ware uitvoergeleenthede vir die provinsie. Die samestelling van die provinsie van Mpumalanga se ekonomiese aktiwiteite en 'n ekonomiese profiel is ook bepaal en bespreek. Die drie produkte wat die hoogste moontlike uitvoergeleenthede bied, is mangaanprodukte, gesoute beesvleis en tamaties. Die resultate het gevolglik getoon dat die produkte wat deur die RCA geïdentifiseer en met die DSM vergelyk is, moontlike uitvoergeleenthede bied vir die Mpumalanga Provinsie en vir Suid-Afrika.

Sleutelwoorde: Handel, Uitvoerbevordering, Mededingende voordeel, Ekonomiese Groei, Decision Support Model (DSM), Revealed Comparative Advantage (RCA), Suid-Afrika, Mpumalanga Provinsie

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LIST OF ABBREVIATIONS

AS – Aggregate Supply

AD – Aggregate Demand

DTI – Department of Trade and Industry

DSM – Decision Support Model

EAP – Economically Active Population

Eskom – Electricity Supply Commission

ETSG – European Trade Study Group

EU – European Union

FDI – Foreign Direct Investment

GVA – Gross Value Addition

GDP – Gross Domestic Product

HDI – Human Development Index

HS – Harmonised Standard

ITC – International Trade Centre

KMIA – Kruger Mpumalanga International Airport

MDC – Maputo Development Corridor

mm – millimetre

OECD – Organisation for Economic Co-Operation and Development

Ph.D. – Philosophiae Doctor

RCA – Revealed Comparative Advantage

ReX – Regional Explorer

R&D – Research and Development

REOs – Realistic Export Opportunities

SARS – South African Revenue Services

US – United States

USA – United States of America

UK – United Kingdom

WCO – World Customs Organization

WTO – World Trade Organisation

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

International trade has a vital impact on a country's economic growth rate, income distribution, the use of natural resources and a country's political relationship with foreign countries (Lindhauer, Perkins & Radelet, 2006:651). International trade benefits a country in the following ways: it provides firms' access to new markets, creates new opportunities for employment and gives a consumer a better variety of choices when it comes to products (Lindhauer, *et al*., 2006:651).

Adam Smith and David Ricardo's theories stated that in an open and closed economy, specialisation and exchange deliver benefits (Greenaway & Kneller, 2004:100). With the introduction of the absolute and comparative[1] advantage theories, Smith (1776:481-485) and Ricardo (1817:96-97) theoretically justified the importance of exports. An important difference is that in an open economy some fraction of the net benefits is absorbed in trade costs (Greenaway & Kneller, 2004:100). By specialising in accordance with comparative advantage the specialisation and exchange gains are identified (Greenaway & Kneller, 2004:100) and global economic integration is indeed advantageous for economic performance (Graff & Plümper, 2001:661).

Exports are vital to a country and exports and economic growth are positively correlated. This argument has a viewpoint from two sides. New endogenous growth theory found a constructive connection between economic growth, international trade and development in the long-run (Romer, 1986:4; Lucas, 1988:1034). Salvatore (2004:360) argued that by reducing trade barriers, the rate of economic growth and development can be influenced by adopting technology from high industrialised countries. Benefits from research and development, as well as from economies of scale, can also influence the rate of economic growth and development (Salvatore,

[1] Although a theoretical distinction can be made between the terms "comparative" and "competitive", these terms will be treated as synonymous in this dissertation.

2004:360). Other influences include: the reduction of price distortions, the efficient allocation of domestic resources, greater specialisation and the rapid introduction of new products to the market (Salvatore, 2004:360).

Pearson (2007:23) further asserts that overall growth improves competitive advantage and in turn promotes exports. Yamanda's (1998:111-112) viewpoint on the issue of exports increasing economic growth is that there is causality because economic growth could also be responsible for increased exports. Another viewpoint from Khalafalla and Webb (2001:1704) is that structural changes that influence exports and imports result in economic growth. Therefore, Pearson (2007:24) states that exports are seen as a determinant of economic growth. A country could benefit from increased exports if exports are stimulated and this in turn could lead to an increase in economic growth (Pearson, 2007:24).

Exposure to foreign markets caused by positive externalities has had a positive impact on the relationship between exports and economic growth. In three ways exports are viewed as an engine of growth (Awokuse, 2008:162). Firstly, output growth can be channelled directly through export expansion as a part of total output. An increase in international demand for domestic products could cause a total growth in output, through and consequent increases in income and employment in the export sector. Secondly, due to exposure to competition in the international market, export growth could have an indirect impact on growth through efficient resource allocation, greater capacity utilisation, exploitation of economies of scale and upgrading technology (Helpman & Krugman, 1985:31-40). Finally, expanding exports that provide foreign exchange can finance increasing levels of imports of intermediate goods (Awokuse, 2008:162).

The expansion of exports, exposure to international competition and increasing foreign exchange can effectively enhance a country's exports as well as serve as important factors when countries need to expand their exports. Through effectively enhancing and applying the latter, countries will be able to determine what products need to be effectively promoted through international competition to increase the country's foreign exchange, thus increasing exports of the country.

1.2 BACKGROUND

Over the past thirty years South Africa has been experiencing sluggish export performance and a reason given for this is that South Africa is seen as a natural resource exporter. Therefore, it could be that the structure of production might affect export diversification and economic growth (Hausmann & Klinger, 2008:609). Moving to structural transformation, introducing new exports products can be complicated for various reasons. Market failures can be created by various factors, including industry externalities (Jaffe, 1986:996-998). Contrary to this view, information externalities are caused by the process of predicting which products more effectively express a country's constantly changing comparative advantage (Hausmann & Rodrik, 2003:614-615).

An investigation of the determinants of the development of a country's exports level of sophistication by Hidalgo, Klinger, Barabási and Hausmann (2007:482), showed that barriers are less binding when moving to spatially nearby products in a region. According to Hidalgo *et al*. (2007:482–487) the idea is based on the fact that every spatially nearby product involves highly specific inputs. These inputs include: knowledge, physical assets, intermediate inputs, labour training requirements and infrastructure needs. By focusing on these inputs, South Africa could enhance its export performance by increasing competitive advantage amongst exporters to gain maximum access to the international market, increase the total of exporters and increase the value and volume of exports (DTI, 2005:85).

A region's infrastructure (ports, roads) and skills (human capital) are also important determinants for export growth (Edwards & Alves, 2006:496). Krugell and Matthee (2009:474) state that the location of a region is also an important factor for export growth. According to Matthee and Naudé (2008:17) South African regions that have been experiencing rapid export growth, were those regions with a high gross domestic product (GDP), fast population growth, high level of skills, great export diversification and shorter distances to ports.

South Africa, being a developing country as well an open economy, has been experiencing difficulties to allocate the necessary resources to enhance trade.

Therefore, the need for a decision support model (DSM) exists. A decision support model (DSM) was developed in Belgium and was adapted to South African data and circumstances (Cuyvers, De Pelsmacker, Rayp & Roozen, 1995:173). The DSM is used for the planning and assessment of export promotion activities and a sequential filtering process to identify products and markets with the most realistic opportunities for an economy (Cuyvers *et al*., 1995:173-174). From an export promotional point of view, the DSM assists the Department of Trade and Industry (DTI) with a powerful tool to identify realistic export opportunities for South Africa (Pearson, 2007:37-38). The DSM helps to prioritise export assistance for potentially successful exporters for South Africa (Pearson, 2007:37-38).

Even though a country could benefit from applying the DSM, Cuyvers *et al.* (1995:174) states that a country must not base all their export promotion decisions on the DSM, because the DSM relies on historical data and provides a short-term scope; therefore, other relevant and important export opportunities might go to waste. The DSM will show these opportunities as sub-optimal, whereas on the long-term, these export opportunities might deliver promising results (Cuyvers *et al.,* 1995:174).

The need exists to target specific sectors within South African provinces. By targeting specific sectors, provincial government entities would know from which sector they could gain the most (Graff & Plümper, 2001:678). Another point of interest is the Gross Domestic Product (GDP) benefits that could be gained from sectoral targeting. Kohli (2003:102) highlighted that a growth in GDP might lead to an increase in employment, technological progress and production effort. On the other hand the cost of implementing strategic trade policies must also be taken into consideration. Additionally, the implications of implementing strategic trade policies must be evaluated by governments beforehand (Graff & Plümper, 2001:678).

To effectively implement such strategic trade policies, government must have control over the following four factors. Firstly, a government needs to be in possession of reliable policy tools, thus having some control over international competitive advantage within a specific sector. Secondly, comparative advantage must have a vital impact on macro-economic performance. Thirdly, a government must have a future outlook on which industries will impact economic performance. Finally, a

country must benefit form strategic trade regardless of the measures taken by other countries to counter competition.

The gains from exchange and maximising welfare and free trade, which will result in world economic prosperity, form the basis of Classical theory (Bender, 2002:1). Different trade theories exist for comparative advantage, which includes the Ricardian theory, Heckser-Ohlin-Samuelson theory and the Neo-Factor-Proportion, for example. Costs and technological differences of comparative disadvantages are explained by the Ricardian Theory, factor price differences by the Hecksher-Ohlin-Samuelson theory and the factor efficiency is linked to the Neo-Factor-Proportion theory (Bender, 2002:1).

For the purpose of this study, the Revealed Comparative Advantage theory is the most suited index. According to Russu (2011:52) RCA represents the export weight of a certain sector in the export amount of ensemble, including the respective sector relative to the export weight of the same sector in the world export value. Revealed Comparative Advantage (RCA) is an important measure in comparative advantage and relates to this study due to the fact of this index is able to identify products or sectors with comparative advantage.

The overall focus of this study will be on the Mpumalanga Province. Over the past fifteen years, the Mpumalanga Province has made its mark as a province rich in natural endowments, well-established infrastructure and moderate economic performance (Mpumalanga Department of Economic Development and Planning, 2009). Mpumalanga's economic growth performance from 1996 to 2010 was 2.7%, only 0.5% lower than the national total of 3.2%. Mpumalanga's Human Development Index (HDI) have been experiencing favourable growth, signifying an improvement in the standard of living. The Gini coefficient level of disparity in 2010 was 0.64 and Mpumalanga's total trade as a percentage of GDP in 2009 was 7.3%. The above statistics gives scope for added development; therefore, it is important to determine this region's export capacity and to determine in which sectors these exports come from.

1.3 PROBLEM STATEMENT AND MOTIVATION

Mpumalanga's contribution to South Africa's economy over the past fifteen years was small and ranked fifth overall of the nine provinces. Mpumalanga's GDP contribution to South Africa was 8.8% in 2008, which was higher than in 1996 (6.9%). Mpumalanga's exports as a percentage of GDP were 5.3% in 1996 and 7.1% in 2008 which indicated a growing trend (see Table 3.8). From these figures it can be derived that Mpumalanga's contribution to the South African economy showed a decrease 2.8% in 1997 to minus 1.6% in 2009.

Mpumalanga's export as a percentage of GDP was experiencing fluctuations over the time period 1996 to 2007. Export rates fluctuated and grew until 2002. Since 2002 Mpumalanga experienced deteriorating export rates (Mpumalanga Department of Economic Development and Planning, 2009). Therefore, it is important to determine the composition of GDP and the dominant sectors in the Mpumalanga Province. It is important to conduct and in-depth study into Mpumalanga's export sector to determine which products show potential export possibilities.

1.4 RESEARCH QUESTION

The research question of this study is twofold:

1. Which are the potential priority export sectors of the Mpumalanga Province?
2. To what extent do the outcomes of this study match the opportunities presented by the DSM?

1.5 RESEARCH OBJECTIVES

1.5.1 Primary objectives

The primary objective of this study is to analyse the composition of the Mpumalanga Province's economic activity to determine where the comparative advantage lies regarding exports. Secondly this study proposes to match the results of the DSM with the findings of the economic composition of the Mpumalanga Province.

1.5.2 Secondary objectives

The primary objectives will be achieved through the following secondary objectives:

- Give an economic profile of the Mpumalanga Province.
- Analyse production figures and other relevant data to determine the products/sectors with the highest contribution to the province's GDP.
- Determination of the priority export sectors with the highest Revealed Comparative Advantage (RCA).
- To evaluate whether the products chosen with the highest export potential in the Mpumalanga Province reflect the export opportunities identified by the DSM.

1.6 RESEARCH METHOD

At first, a literature review will be conducted to discuss the economic theory and practice of exports. Economic growth determinants and how this link with exports will also be investigated. The literature review will also include an economic profile of Mpumalanga Province and its priority export sectors. An overview on why Mpumalanga has been experiencing declining growth rates and whether this is still the case, will also be researched. By conducting desk research the above objectives into the economic composition of the Mpumalanga Province's GDP will be achieved.

The empirical analysis will focus on determining the composition of Mpumalanga's GDP. This will be achieved by assessing the contribution of the different sectors in the province to provincial GDP. Short-term and medium-term growth rates, exports as a percentage of GDP, as well as gross value addition (GVA) of each sector will be calculated to depict the change in contribution by industry sectors to GDP, over the time period 2000 to 2010. In addition, these sector growth rates will be compared to the Mpumalanga Province's economic growth rate. The data will be obtained from the following sources: The Municipal Demarcation Board website, Mpumalanga Department of Economic Development, Mpumalanga Department of Finance, Environment and Tourism, Statistics South Africa, the South African Revenue Service (SARS) and the Mpumalanga Provincial government website. The data will be analysed in Microsoft Excel.

The results will be presented by using tables and discussions. The data will then be analysed and the RCA index of the various sectors will be determined. Finally, the results of the DSM will be matched with the findings of the composition of economic activity and RCA in the Mpumalanga Province. The DSM will then be discussed to determine whether it was relevant in targeting exportable products in South Africa. Export opportunities will be evaluated and recommendations will be made.

1.7 DIVISION OF CHAPTERS

The study is structured as follow. Chapter 2 will provide a theoretical overview of the determinants of economic growth. An overview of the economic activity of in the Mpumalanga will be discussed in Chapter 3. Chapter 4 will provide a theoretical framework of the RCA. The results of the RCA from the Mpumalanga province will be analysed in Chapter 5. The summary and conclusion of this study as well as recommendations for further research will be discussed in Chapter 6.

CHAPTER 2: THE THEORETICAL OVERVIEW OF THE DETERMINANTS OF ECONOMIC GROWTH

2.1 INTRODUCTION

The focal point of this chapter will be on the theoretical determinants of economic growth. Economic growth may lead to higher levels of wealth for individuals, lower poverty levels, better economic development and job creation. This chapter is also going to consider export promotion, RCA and the DSM. Through the description of the latter, a clearer perceptive of the determinants of economic growth can be given, as well as a reason why it is important in the Mpumalanga Province to finally conclude exports as the solution to enhancing exports in the province.

2.2 THEORY OF THE DETERMINANTS OF ECONOMIC GROWTH

Over the past two centuries, economists have been investigating a wide range of studies into the determinants of economic growth. Theoretical and applied research of the determinants of economic growth has also been receiving more notice amongst economists. Although uncertainty exists about the process underlying economic performance, theories exist that the role of an array of factors determines economic growth. A wide variety of growth models exist, but the focus will only be on the main theories and determinants of economic growth. At the end this chapter will focus on applied research. How various sectors of the economy fit together first needs to be understood; therefore, the following section will explain the general framework of the economy and what functions represent which sector.

2.2.1 The aggregate demand and supply model and equilibrium in the economy

The aggregate supply (AS) and aggregate demand (AD) model is widely used to describe production and expenditure and what the effect of this is on the price level (Colander & Gamber, 2002:110). The aggregate demand curve represents the expenditure side of the economy, whereas the aggregate supply curve represents the production side of the economy.

2.2.1.1 Aggregate demand (AD)

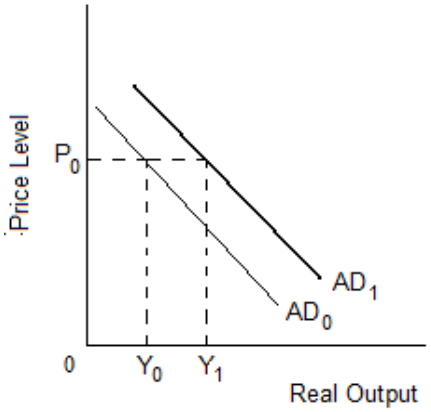
Aggregate demand may be represented as the sum of:

$$AD = C + I + G + (X – M) \quad \text{Eq. 1}$$

Where:

AD = Aggregate demand
C = Household consumption expenditures
I = Investment expenditures
G = Government spending
X = Exports
M = Imports

Figure 2.1: Aggregate demand



Source: Adapted from Colander and Gamber, (2002:110); Miles and Scott, (2005:367).

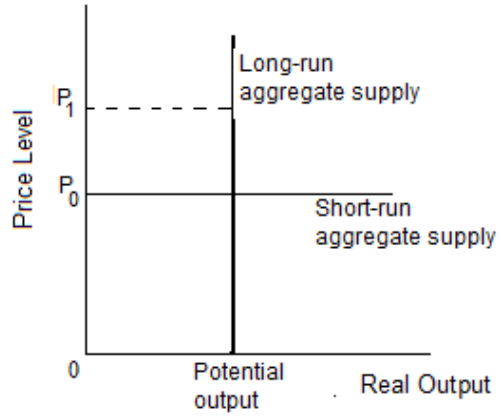
Monetary and Fiscal policies will affect the AD curve with expansionary monetary and fiscal policies shifting the curve to the right, while contractionary monetary and fiscal policies will move the curve to the left (Colander & Gamber, 2002:110).

2.2.1.2 Aggregate supply (AS)

Aggregate supply is the total output that is produced in an economy (Y) at various price levels (Colander & Gamber, 2002:110).

Using Figure 2.2 Colander and Gamber (2002:111) explains that the AS curve's shape differentiate between the long-run from the short-run. In the short run, the price level will almost always be fixed. The reason given for this is that without increasing unit cost, production can be increased and firms will again supply the demanded quantity at the given price level. In the long-run aggregate supply is determined by potential output. The reason given for this is that output is determined by the inputs and the state of technology that is available, and therefore the change in aggregate demand will only lead to price changes (Browning & Zupan, 2012:182).

Figure 2.2: Aggregate supply



Source: Adapted from Colander and Gamber, (2002:110).

Figure 2.2 shows that an increase in aggregate demand will only lead to an increase in price level. When aggregate demand declines, the price level will consequently also decline.

2.2.1.3 Equilibrium between the AS and AD curve

At equilibrium the aggregate quantity supplied equals aggregate quantity demanded and this occurs where the AS and AD curves intersect at point E (Colander & Gamber, 2002:111). This intersect is shown in Figure 2.3.

Therefore, aggregate quantity supplied equals aggregate quantity demanded, which can be represented as:

$$AS = C + I + G + (X - M) \qquad \text{Eq. 2}$$

In a closed economy investment, (I) will have to come from savings (S):

$$\text{Saving} = \text{Investment}$$

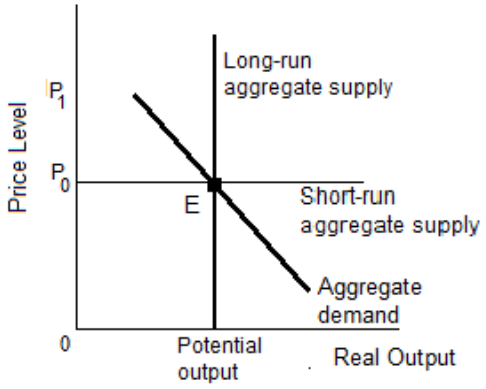
$$S = I$$

And if local savings is not sufficient:

$$I = S^p + S^g + S^f$$

Where: p = private, g = government and f = foreign savings

Figure 2.3: Equilibrium



Source: Adapted from Colander and Gamber, (2002:111).

This confirms Keynes theory that economic growth starts with investment and economic growth is possible if either savings, investment, consumption or government variables increases (Keynes, 1937:218-221). Taking the above into account, exports are essential.

The following part of this chapter will focus on the Neo-Classical Solow Model and the Endogenous Growth Theory respectively.

2.2.2 Neo-Classical Model of Solow

2.2.2.1 The Basic Growth Model

The basic equilibrium structure may be utilised to explain the basic structure of a growth model. Barro and Sala-i-Martin (2004:23) used the following basic equilibrium structure: Households own the inputs and assets of an economy and determine how much of their income is used and how much saved. Firms hire inputs (capital and

labour) and use them to produce goods which are sold to households and other firms. Finally, markets exist through firms who sell goods to households and other firms and the households who sell their inputs to the firms, all with the aim of achieving a profit. Barro and Sala-i-Martin (2004:23) used the example of a person who owns their inputs and who also manages technology that transforms these inputs into outputs. Therefore the production function takes on the following form (Barro & Sala-i-Martin, 2003:24):

$$Y(t) = F[K(t), L(t), T(t)] \qquad \text{Eq. 6}$$

Where,

- Y(*t*) = the flow of output produced at time *t*
- K(t) = Capital goods: the durable physical inputs (such as machinery and buildings)
- L(t) = Labour: the inputs associated with human effort (such as the number of workers)
- T(t) = Technology and knowledge used to provide workers with the ability to do the work.

The Solow model builds further on this concept and will be considered next.

2.2.2.2 The Solow Growth model

The history of the Solow Model dates back to 1956 and made a great contribution to conventional economic growth theories (Farmer, 2010:56). The Solow growth model shows how technological innovation, saving, depreciation and population growth determine steady-state economic growth (Colander & Gamber, 2002:129). This model is based on the basic assumptions of constant returns to scale, diminishing marginal productivity of capital, exogenously determined technical progress and substitutability between capital and labour (Petrakos & Arvantitidis, 2008:12). Snowdon and Vane (2005:602-603) highlight that the Solow model focuses on the impact that growth has on saving, population growth, and technological progress and consequently depicting that the starting point of the discussion of economic growth starts with the Solow model. For the means of this study only the basic production function of the Solow Growth model will be discussed.

2.2.2.2.1 The production function

A Neo-Classical aggregate production function determines the Solow Model and focuses on the adjacent causes of growth. The basic production function is structured as:

$$Y = A \bullet f(K, L) \qquad \text{Eq. 4}$$

Where:

- Y = output
- A = technology
- f(K , L) = capital and labour

This function may be a simplified progress, so that the relationship between output per worker and capital per worker can be distinguished.

$$Y = f(K, L) \qquad \text{Eq. 5}$$

Here it is assumed that this basic production function has constant returns to scale and to diminishing marginal product for both capital and labour. Diminishing returns is a result of positive functions from output per worker. Constant return to scale highlight that an economy will be large and because labour and specialisation are exhausted, explain why the size of the economy does not influence output per worker (Snowdon & Vane, 2005:604).

The Solow Growth Model Production Model is a per person or per capita production function; therefore, along with the assumption of constant returns to scale, output and all the other inputs, can be divided by labour (Lindhauer, *et al*., 2006:119):

$$Y/L = A \bullet f(K/L, 1) \qquad \text{Eq. 5}$$

Therefore:

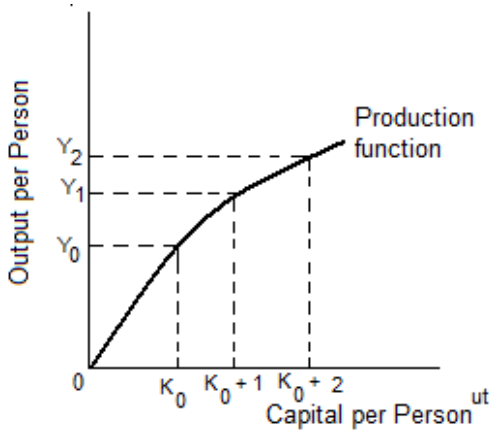
$$y = A \bullet f(k)$$

Where:

- y = output per person
- k = capital per person
- A = the measure of technology per person

This per capita production function shows that output per person is a function of capital per person (Colander & Gamber, 2002:130). In figure 2.4 the production function per person shows how output per person changes when capital per person increases (Lindhauer, *et al*., 2006:119).

Figure 2.4: Production function per person



Source: Adapted from Colander and Gamber, (2002:130)

The diminishing marginal product plays a vital role in the Solow growth model and limits the effect that increasing capital has on the growth rate (Browning & Zupan, 2012:187).

Figure 2.4 shows that capital per person is k_0 and output per person is y_0 (Colander & Gamber, 2002:130). When adding one more unit of capital (k_0+1), the output per person will increase to y_1. This is an indication of production of the input sectors of production. When capital increases, output will increase in smaller amounts because of diminishing marginal product.

2.2.2.2.2 Saving and investment in the Solow Growth model

To gain some insight into economic growth, understanding the forces that affect the level of capital, namely investment and savings, is needed (Snowdon and Vane, 2006:606), because savings and investment are seen as forces that increase capital per person. The purchasing of capital is regarded as investment, and this in turn leads to the addition of capital stock (Colander & Gamber, 2002:131). The level of investment is determined by the volume of personal savings and by assumption all

savings are transformed into investment (Snowdon and Vane, 2006:606). This function can be expressed as:

$$I = S = vY \qquad \text{Eq. 6}$$

Where:

S = saving
I = investment
vY = saving and investment is a constant fraction of income

By dividing it by labour (L), it is once against transformed into a per capita relationship,

$$i = s = vy \qquad \text{Eq. 7}$$

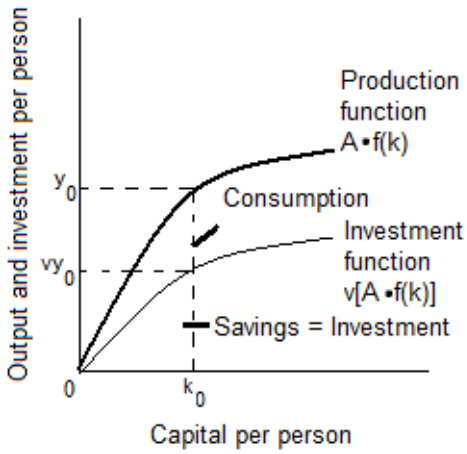
Where:

I = investment per person
S = saving per person
Vy = saving per person is a fraction, v of income per person

Income per person is also determined by the capital per person. The investment per person (i) also depends on the income per person. The investment per person is related to the capital stock through the production function, implying an investment rate of:

$$i = v\,[A \bullet f(k)] \qquad \text{Eq. 8}$$

Figure 2.5: Saving and investment per worker



Source: Adapted from Colander and Gamber, (2002: 131)

2.2.2.2.3 Population growth and depreciation

Savings and investment are seen as forces that increase capital per person. On the contrary, population growth and depreciation are seen as the two forces that decrease the capital per person (Colander & Gamber, 2002:132). The first force, depreciation (d), is the rate at which capital depreciates or loses its value due to wear and tear. Depreciation then reduces the capital per person by the rate of depreciation: by multiplying it with capital per person, *dk*.

The second force is population growth. If population growth increases, the capital per person declines, implying a decline in the wealth of all individuals. This is because one unit of capital is divided by the greater number of people. Population growth therefore reduces the capital per person (k) by the rate of population growth (n) multiplied by the capital per person, *nk* (Colander & Gamber, 2002:132; Samuelson & Nordhaus, 2010:222).

2.2.2.2.4 Balanced growth investment

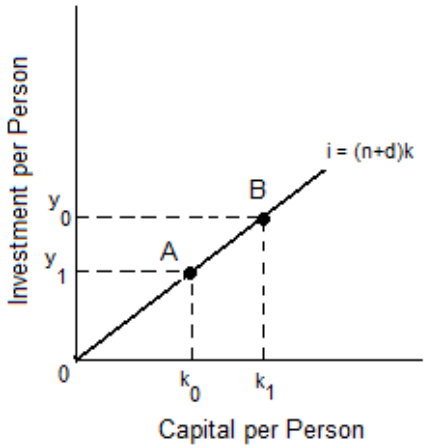
Balanced growth investment (i_b) is the amount of investment that keeps capital per person constant at a level that is about enough to cover depreciation and population growth (Colander and Gamber, 2002:132). It is expressed as:

$$i_b = (n + d)\text{k} \qquad \text{Eq. 9}$$

This equation shows that capital per person needs to be constant and investment must equal the current capital per person times the rate of population growth and the current rate of depreciation multiplied by the capital stock, to ensure that income growth does not decline (Colander & Gamber, 2002:132). The ideal is that investment and growth levels will exceed this to achieve higher levels of wealth.

In Figure 2.6 the balanced growth investment line represents the rate at which the capital stock has to increase for the output per person to stay constant (Colander & Gamber, 2002:133).

Figure 2.6: Balanced growth investment line

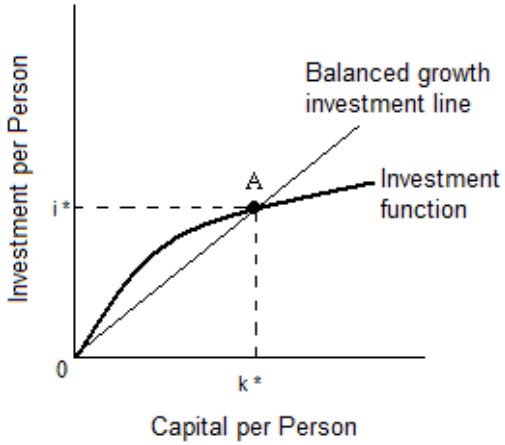


Source: Adapted from Colander and Gamber, (2002: 132).

2.2.2.2.5 Equilibrium in the Solow Growth model

The conclusion of the Solow growth model is that the economy will always be driven towards an equilibrium in which the level of output per person does not change (Colander & Gamber, 2002:133).

Figure 2.7: Steady-state equilibrium



Source: Adapted from Colander and Gamber, (2002: 133).

Figure 2.7 shows that equilibrium in the Solow growth model occurs when output per persons is constant. Investment per person must at least equal balanced growth investment to obtain economic growth (Colander & Gamber, 2002:133 Lindhauer, *et al*., 2006:123). The intersection of the balanced growth investment line and the investment function is called the steady-state equilibrium. Steady-state equilibrium

occurs where the investment function intersects the balance growth investment line (Lindhauer, *et al*., 2006:123). What this means for the Solow Growth Model is that capital and output per person can remain constant, even though the population is increasing and the capital is depreciating (Colander & Gamber, 2002:134; Lindhauer, *et al*., 2006:123). The ideal is that investment and production levels will be achieved where production and employment will move higher than this steady state and achieve higher levels of wealth and lower levels of poverty. The Solow Model further implies that higher levels of growth require technological development and higher productivity (Colander & Gamber, 2002:134; Lindhauer, *et al*., 2006:123).

2.2.3 Endogenous growth theory

The Neo-Classical Growth Model dominated the thoughts of economists for centuries. Since the 1980's there was a renewed interest in other growth theories, introducing new growth theories. The most important one of these is the Endogenous Growth Theory. The Endogenous Growth Theory highlights different growth opportunities in physical and knowledge capital (Dornbusch, Fischer & Startz; 2008:78). The main idea of Endogenous Growth Theory is that increased investment in knowledge increases growth. The key here is to link higher saving rates to higher equilibrium rates (Dornbusch *et al*., 2008:79). It was realised that with the same levels of capital and labour, higher levels of output and economic growth could be achieved (Cypher & Dietz, 2009:239). This is especially important for regions whose levels of capital are limited, like in Africa and the Mpumalanga Province.

The basic version of the production function is to assume a function with a constant marginal product of capital with capital as the only factor:

$$Y = aK \qquad \text{Eq. 9}$$

Where:

Y = output
a = marginal product of capital
K = capital stock

Furthermore, the model assumes that the savings rate is constant at s, and that no population growth or depreciation exists. This means all the saving goes to increasing the capital stock (Dornbusch *et al*., 2008:79).

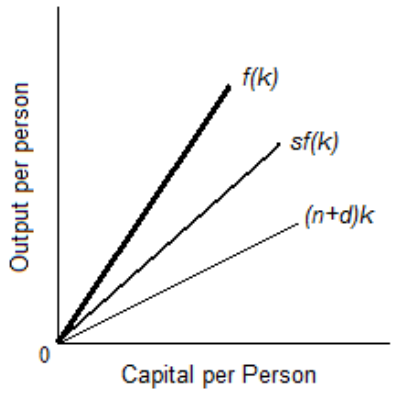
$$\Delta K = sY = saK \qquad \text{or} \qquad \Delta K/K = sa$$

This means that the capital growth rate is proportional to the saving rate; and output is proportional to capital; therefore, the growth rate of output is:

$$\Delta Y/Y = sa$$

Figure 2.8 shows that the higher the saving rate, the bigger is the gap of saving above required investment and faster growth; therefore, the higher the saving rate, the higher is the growth rate of output (Dornbusch *et al*., 2008:79).

Figure 2.8: Endogenous growth



Source: Adapted from Dornbusch *et al*., (2008: 79).

The Endogenous Growth Theory differs from the Solow Model in that:

- inputs are defined more broadly in order to encompass accumulated capital supply and “human” capital;
- the model includes the effect of technological innovation, which is endogenous to any economy. For each economy the level of technology and new innovations will differ, and not as in the Solow Model where it is assumed that identical technology is available in all countries;
- inputs in production are complementary to production – and not substitutes (Cypher & Dietz, 2009:252).

In the Endogenous Growth Theory there are no decreasing returns to scale; increases in inputs will always lead to increases in output. The effect of increasing technology and innovation, however, is that economic growth can occur without the amounts of capital and labour increasing. The increase, however, is not exogenous to the economy, but is endogenous because the size of technology in specific countries should be determined by:

- the level and kind of education and training in the labour market;
- the type of investment which the community makes in research and development;
- the state's policies with regard to research and development, education and training, intellectual property rights and patents;
- the institutional capabilities of the economy in both the private and public sectors (Cypher & Dietz, 2009:262).

The implications of the Endogenous Growth Theory are that:

- economic growth does not necessarily lead to convergence in per capita income between countries;
- a lengthy recession in one country can lead to a permanent per capita income gap between itself and other countries;
- countries where more research and development are done, will experience more rapid economic growth compared to countries which do not invest in such;
- international financial capital can in fact flow from less-developed countries to developed countries, because complementary investment in human capital, research and infrastructure is higher in such countries. The high rates on (scarce) capital investment in less-developed countries are thus eroded by deficient complementary investment;
- purely market-based approaches to economic growth will be sub-optimal (Kleynhans & Naudé, 2003:100).

The latter conclusion is an important result in the endogenous-based literature. It is based on the fact that education and training, research and development and learning-through-doing experiences of workers, are all characterised by externalities (spill-over effects).

The following section will focus on the theory behind the determinants of economic growth.

2.3 THE DETERMINANTS OF ECONOMIC GROWTH AND ECONOMIC PERFORMANCE

This section will focus on the theoretical determinants of economic growth, whereas the previous section focused more on the theoretical foundations. As previously mentioned, theoretical research into the determinants of economic growth has been receiving a wide range of increased attention in previous years. Factors that have an impact on economic growth differ from conceptual and methodological viewpoints (Petrakos & Arvantitidis, 2008:14). The most important determinants are investment, human capital and openness to trade, foreign direct investment, political issues, as well as innovation and research and development activities. The sources of economic growth each have a set of explanatory parameters and therefore the rest of this section will focus on each source separately.

2.3.1 Investment

The Neo-Classical and Endogenous Growth Models have identified investment as the most essential determinant of economic growth. The Neo-Classical Model and the Endogenous Growth Model differ on their views on investment; however the Neo-Classical Model considers the impact of investment in the transitional period. The Endogenous Growth Model argues for more permanent effects of investment (Petrakos & Arvantitidis, 2008:14). It is also necessary to distinguish between public and private types of investment that are required for economic growth and development (Lindhauer, *et al*., 2006:428).

Public investment is investment in roads, ports, telecommunication, schools and health facilities and is mostly funded by the government. Private investment is investment in new employment, capital goods, technologies and growth in economic output and receives more investment than public investment. The main factors influencing investment are those that influence the quality of both investment and productivity (Lindhauer, *et al*., 2006:428). These factors affect economic growth by

improving productivity in the economy. These factors also include macro-economic and political stability, infrastructure, economic openness, institutional quality, as well as governance and regulatory quality.

2.3.2 Human capital

The main source of economic growth in many Neo-Classical and Endogenous Growth Models is human capital (Petrakos & Arvantitidis, 2008:14). The definition of human capital is given as: "the knowledge and ability to produce that is embodied in the labour force" (Dornbusch *et al*., 2008:29). Even though human capital is seen as a source of economic growth, Hers (1998:36) states that the mechanisms through which human capital stimulates growth still remain unclear. A wide range of studies have measured the quality of human capital and its relationship with education and most of these studies found that education (educated labour force) is a key determinant of economic growth (Petrakos & Arvantitidis, 2008:14; Barro and Sala-i-Marin, 1995: 247-251; Hers, 1998:37-39).

2.3.3 Innovation and Research and Development activities

Innovation and Research and Development activities (R&D) are seen as key factors in economic progress through increased productivity and growth (Petrakos & Arvantitidis, 2008:14). According to Yanyun and Mingqian (2004:2) theoretical literature suggest that R&D is seen as an engine of growth, but other studies have shown that technological adaption does not come without its relevant costs. Therefore, it is important for countries to adopt "absorptive" and a "national learning" capacity that will in turn be functions of spending on R&D (Yanyun & Mingqian, 2004:2). In the late 1990's endogenous R&D growth models made its appearance. These models consisted of intensive and extensive innovations (Caminati, 2003:237).

Intensive innovations cause an increase in productivity of intermediate goods. In contrast, extensive innovations increase output, which is the number of intermediate goods produced. Therefore, the role of R&D activities showed a strong relationship between innovation, R&D and economic growth (Petrakos & Arvantitidis, 2008:14).

The idea is to be so competent using scientific knowledge and existing technologies and to be so proficient that a country can develop its own indigenous technology that is in line with its own needs and level of development (Kleynhans, 2004:185). New technologies always have the best value and provide the highest income and growth (Cypher & Dietz, 2009:422).

2.3.4 Macro-economic policies

According to Petrakos and Arvantitidis (2008:15) the existent literature suggests that there is little consensus on which policies is more conductive to growth. A stable macro-economic condition is, however, always seen as necessary for economic growth (Fischer, 1993:485-486). According to Fischer (1993:485-486) macro-economic stability is needed to constructively affect growth. This is achieved through reducing price uncertainty, moderating public deficit and public debt levels. By doing this, the crowding out effect and the likelihood of tax increases is reduced (Fischer 1993, 1993:485-486). Macro-economic instability could cause a negative impact on growth because of its effects on productivity and investment (Petrakos & Arvantitidis, 2008:15).

2.3.5 Openness to trade

A country's openness to trade has a positive link with economic growth. Openness to trade facilitates the movement of technology and the diffusion of knowledge (Petrakos & Arvantitidis, 2008:15). Being open to trade also means more exposure to competition and contributes to the exploitation of comparative advantage. According to Salvatore (2004:360) a more open economy can have an important influence on the rate of economic growth and development. This is done in the following ways:

- Adopting technology from advanced nations faster
- Benefiting from R&D
- Benefiting from economies of scale
- Allocating domestic resources more efficiently as well as from price distortion reductions
- Achieving greater specialisation and production efficiencies and

- Introducing new products onto the market faster

The Endogenous Growth Theory postulates that technological change is the cause of most externalities. These externalities can "offset any propensity to diminishing returns to capital accumulation" (Salvatore, 2004:360). Some empirical studies have shown that a positive correlation exists between economies which are more open to trade, their manufactured exports and economic growth (Pearson, 2007:21). According to Wacziarg (2001:395-401):

> *"The openness of an economy can influence economic growth through six potential channels: macroeconomic policy quality, government size, price distortions, investment share of gross domestic product, technology, and foreign direct investment."*

2.3.6 Foreign direct investment (FDI)

Foreign direct investment has potential to enhance economic growth. FDI generates import benefits for a country, such as technological spill-overs and skills transfers that increase productivity (Krugell & Matthee, 2008:2). FDI distributes highly developed types of technology. FDI facilitates the diffusion of advanced technology into the economy. This is also achieved through capital goods imports that are later imitated or through the diffusion of knowledge and expertise (Wacziarg, 2001:398). Foreign firms that invest in another country can enjoy higher productive efficiency and lower costs (Borensztein, De Gregorio, & Lee, 1998:135). In the case of developing countries, Borensztein *et al.*, (1998:133) stated that higher efficiency is achieved from receiving FDI, advanced skills and more modern technology. However, FDI may also result in economic distortions.

FDI is the means through which technology transfers and protectionist trade policies can cause problems. FDI is the only means domestic firms often have to enable them to export to other countries (Borensztein *et al.*, 1998:133-136). FDI has also played an important role in internationalising global economic activity. This role is stressed in several models of Endogenous Growth Theory (Petrakos & Arvantitidis, 2008:15).

2.3.7 Political issues

Research shows that political issues affect the economy and its potential for growth to a great extent (Kormendi & Meguire, 1985:156-157). An example is when political instability occurs. When residents do not have access to the productive resources of an economy, conflicts arising amongst residents over distribution will most likely harm economic growth (Alesina & Rodrik, 1994:484-485).

The problem of land redistribution is also negatively correlated with economic growth. When a political circumstance is uncertain in a country, investment is discouraged and this hinders economic potential (Petrakos & Arvantitidis, 2008:16). Political stability in a country is important to growth. A country that manages political stability is more likely to receive investment from foreign investors. Therefore, the level of democracy found in a country also plays an important role in enhancing growth.

The factors and determinants of economic growth have an impact on how growth in a country can be sustained. Exports contribute to economic growth and therefore governments drive to promote exports in order to increase exports. The following section will discuss the theoretical consideration of export promotion and the way that countries can utilise in an effort to enhance their export towards the rest of the world.

2.4 EXPORT PROMOTION

Countries used a variety of export promotion programmes and schemes to enhance their own export performance in the past and there seems to be no clear answer to which programme works the best. Export promotion is a development characteristic for countries that tend to have its own set of export incentives (Van Aarde & Viviers, 2008:2). According to the Department of Trade and Industry (2006) of South Africa, export promotion organisations uses various marketing and information services designed to support and encourage domestic firms to export their goods and services.

This section will consider public and private institutions, effectiveness of export programs and the allocation problem.

2.4.1 Public and private institutions in export promotion

Cuyvers *et al.*, (1995:173) stated that export promotion activities are conducted by both private and public institutions. Private and public institutions gather information regarding foreign markets, competitors and their relevant products and barriers to entry, where competitors are situated. This information is gathered from libraries, publications, internet resources and journals, to name a few. This information is then passed on to potential exporters. Another important duty these institutions provide is multi-sectoral economic missions to international countries. These institutions provide exporters with the opportunity to participate at trade fairs and they also have trade officers that assist exporters in market research, prospecting and market penetration (Cuyvers *et al.*, 1995:173-174).

2.4.2 The efficiency of export promotion programs

Governments regularly provide export promotion assistance in the form of export promotion programmes. Criticism exists; however, as it is often alleged that publicly funded export promotion programmes only benefit large companies (Pearson, 2007:29). Richards, Van Ispelen and Kagan (1997:336) found that when export promotion activities are aimed at manufactured goods, these promotion programmes seem to be more effective, as they are mostly focused on individual products, and these forms of export promotion should be promoted.

Czinkota (2002:123-126) defines organisational capability as knowledge and advanced research with interactive connections between the market and technological and human resources. Managerial competencies are defined as education, exposure to foreign markets and expertise of export products. The assumption is made that governments can improve export performance by the successful use of their export promotion programmes. Arguments against the use of government export promotion programmes, as a measure to enhance a country's economic growth and performance, do however still exist.

2.4.3 The allocation problem

The allocation problem is a main cause of concern for export promotion institutions, because it is difficult to devote scarce resources to a variety of activities (Cuyvers *et al.*, 1995:173). These include a range of export markets and export promotion instruments. In his case study on Thailand, Cuyvers (2004:255) suggested that developing countries should be concerned with export promotion as a public good to enhance knowledge. This can improve capabilities in the international trade relations arena (Cuyvers, 2004:255). Enhanced international trade relations could be accomplished through a variety of tools, such as centralised information gathering and distribution, the organisation of outgoing trade missions and finally the provision of incentives to obtain more market knowledge through companies that participate in trade fairs (Cuyvers, 2004:255). When these obligations are fulfilled, the public export promotion institutions that pursue these activities can improve national welfare through a resulting increase in export volumes. With the welfare-increasing effect, come issues such as social costs dependable on the competence and personal interest of civil servants, the degree of organisational flexibility and the communication channel quality within the private sector (Cuyvers, 2004:255). Finding new markets has therefore become more important to export promotion organisations and exporting companies.

National Governments generate interest in the standard task of export promotion. National governments stimulate exports using subsidies, tax exceptions, and special credit lines as their most important export promotion instruments (Anon, 2007:1). The involvement of governments in designing export promotion programmes to promote specific sectors has become more important after the export successes of the so-called Asian “Tiger Economies” (Glenday & Ndii, 2000). Cuyvers (2004:256) highlights that scarce national resources are a problem, as well as the need to develop and implement export promotion strategies and activities.

Governments find it difficult to choose specific sectors for export promotion and to allocate their scarce resources in these sectors (Shankarmahesh, Olsen, & Honeycutt, 2005:204). Gencturk and Kotabe (2001:51-72) highlights government involvement where the competitive position of firms did improve through export

support, which resulted in export success. The decision support model is such a tool.

South Africa has developed its own Decision Support Model (DSM) in recent years. This model enables the government to promote export of commodities for which international market demand exists and where South Africa has a competitive advantage. The following section will consider this decision support model.

2.5 THE DECISION SUPPORT MODEL (DSM) FOR THE ALLOCATION OF REALISTIC EXPORT OPPORTUNITIES

A Decision Support Model (DSM) was developed and applied in Belgium and now adopted, refined and extended for South Africa (Cuyvers *et al*., 1995). This model can be used for the planning and assessment of export promotion activities (Cuyvers *et al*., 1995).

2.5.1 The importance of the DSM

Governments frequently have limited resources to allocate between export promotional instruments and different export activities (Cuyvers *et al*., 1995:173). From an export promotion point of view, the Decision Support Model (DSM) provides a powerful tool that can identify realistic export opportunities for South Africa (Pearson, 2007:37-38). Export promotion organisations can identify and justify the allocation of export promotion resources. The DSM also helps to prioritise export assistance to potentially successful exporters from South Africa (Pearson, 2007:37-38).

In order to address this problem, the DSM was applied to the South African economy to identify products with high export potential. This support will help exporters in South Africa in various ways. It enables exporters to access foreign business opportunities that will lead to realistic export markets for their products and increase a firm's export profitability and export volumes (Pearson, 2007:37-38). In the past the South African government often promoted exports, without any scientific base, which often lead to misallocation and a waste of resources. The DSM is used to help

governments to assign their scarce resources into markets with the highest export potential (Cuyvers *et al.,* 1995:174). Steenkamp, Rossouw, Vivers and Cuyvers (2009:14) highlighted that the priority exportable products for each specific market that is provided by the DSM can be useful for an export promotion agency.

2.5.2 Caution against the DSM

Even though a country could benefit from applying the DSM, Cuyvers *et al.,* (1995:174) states that a country must not base all their export promotion decisions on the DSM, because the DSM relies on historical data and has a short term scope. This could cause other relevant and important export opportunities to be lost, because the DSM will indicate these opportunities as sub-optimal, whereas in the long-term, these export opportunities might deliver promising results (Cuyvers *et al.,* 1995:174; Steenkamp *et al*., 2009:31)). Criticisms and feedback from foreign trade officers and export councils should also be taken into deliberation (Steenkamp *et al*., 2009:31).

2.5.3 The Process of the DSM

The DSM works through a process of four filters and each filter is used for a certain task. The first filter includes all the countries of the world as potential target markets. This filter gathers information regarding the political and commercial risk of doing business with countries to assess markets that do not show sufficient general export potential (Cuyvers, 2004:256). The market potential of each of the products for the remaining countries is then assessed in a second filter and this is done by product-related criteria of market potential. Filter three involves an in-depth study into the remaining potential export opportunities. Markets that are complicated to access due to barriers of entry are then eliminated. Finally, the fourth filter determines the most practical export opportunities that came out of the third filter. This is done by parameters that assess the strengths and weaknesses of the exporting country in the specific market (Cuyvers, 2004:257).

2.6 SUMMARY AND CONCLUSION

The theoretical determinants of economic growth, export promotion, Revealed Comparative Advantage (RCA) and the Decision Support Model (DSM) were discussed during the course of this chapter.

Theoretical aspects were studied first. The Keynesian theory highlighted the fact that increases in savings, investment consumption and government variables that lead to economic growth, starts with investment. Economic growth will follow and thus concludes that exports are sustainable. The Neo-Classical Model depicted that a steady state-economic growth is determined by technological innovation, saving, depreciation and population growth. The Endogenous Growth Theory concludes that economic growth and high levels of output can be achieved with constant levels of capital and labour.

The public and private institutions in export promotion, effective s of export promotion programs and the allocation problems that exist within export promotion were also discussed in this chapter. Investment, human capital, openness to trade, foreign direct investment, political issues and export-led growth are determinants of economic growth and economic performance. Without these determinants it will be difficult to indicate and understand economic growth and performance. A country with its own set of export incentives specifies export promotion as a development characteristic.

Finally the Decision Support Model (DSM) were discussed in this chapter. The Decision Support Model (DSM) was developed to prioritise export assistance to potentially successful exporters from South Africa and to identify products with high export potential. Caution against the DSM is its application of historical data and it has a short-term scope predicament. Finally the four filters through which the DSM focuses were discussed. The first filter includes all the countries of the world as potential target markets and through the process of elimination countries without sufficient export potential are excluded. Market potential of each product is then assessed in filter two and some countries are once again eliminated in this filter. Filter three consists of an in-depth study done on the remainder of the export

opportunities and filtered again. Finally, the fourth filter determines the most practical export opportunities that came through the third filter.

The following chapter will provide an economic overview of the Mpumalanga Province. A socio-economic outlook and a general overview of the Mpumalanga Province will be given. The economic activity and trade of the province will also be discussed subsequently.

CHAPTER 3: AN OVERVIEW OF THE ECONOMIC ACTIVITY IN THE MPUMALANGA PROVINCE

3.1 INTRODUCTION

The focus of this chapter is to provide an economic overview of the Mpumalanga Province. This chapter will provide a socio-economic outlook of the Mpumalanga Province to offer a realistic picture of the socio-economic conditions of the province. By providing an overview of the province, one will come to a better understanding of the province and its importance to the country.

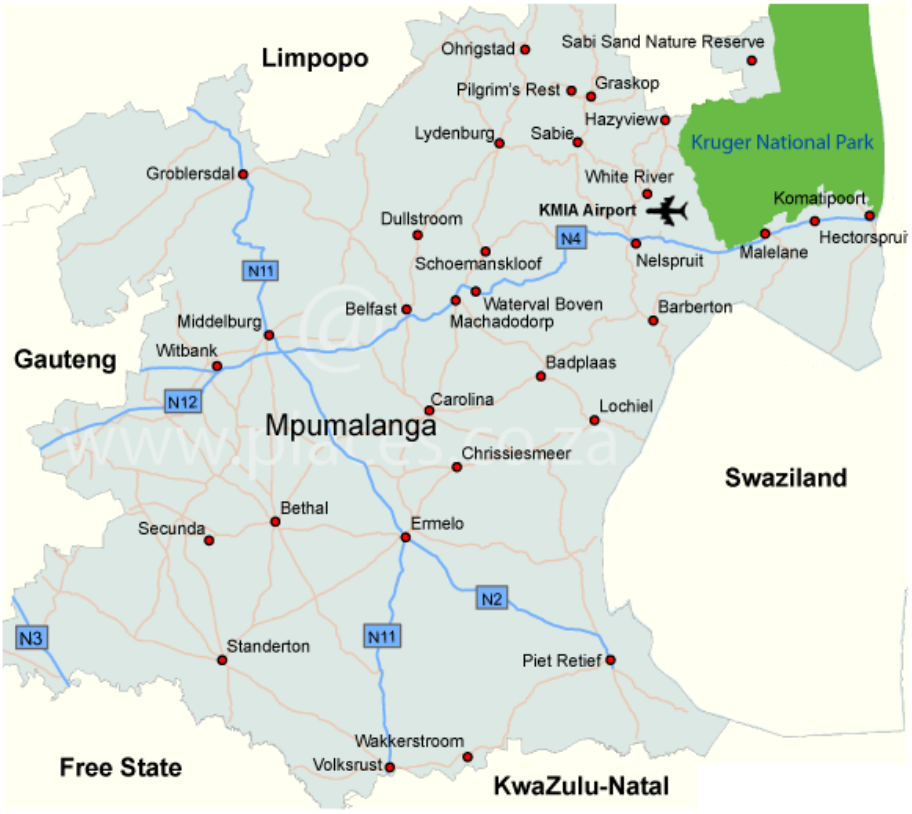
The main focus of this chapter will be on the economic activity and trade of the province. Additionally this chapter will give a brief description of the following relevant aspects: demographics, labour, education, infrastructure and investment projects. Before the latter is discussed, a brief geographic background of the Mpumalanga Province will subsequently be given in Section 3.2.

3.2 GEOGRAPHIC BACKGROUND OF THE MPUMALANGA PROVINCE

The Mpumalanga Province is rich in natural endowments, well-established infrastructure and moderate economic performance (Mpumalanga Department of Economic Development and Planning, 2009). Mpumalanga is known by many South Africans as the “place where the sun rises” and is situated north of KwaZulu-Natal and borders Swaziland and Mozambique in the east (see figure 3.1). Its location is one of the main benefits of the Mpumalanga Province when one considers investment in this province. The province with its abundance of resources is an active trade and investment environment for domestic and local investors (Adlam, 2009).

Rich agricultural land and the suitable climate conditions for agriculture ensure this province is the nationwide leader in producing an assortment of agricultural products and forestry products. The high quality agricultural land in the Lowveld area specialises in the production of sugar cane, subtropical fruit, citrus fruit, nuts and vegetables.

Figure 3.1: Map of Mpumalanga



Source: Adapted from Southern African Places, 2012

Other crops, not in any means less important than the above mentioned products, include coffee, cotton, tobacco and staples such as sunflowers, maize and wheat. The eastern parts of the province have forestry plantations that include wattle, pine and eucalyptus as the main focus, as well as cattle, pigs and sheep rearing. The game farming enterprises in the Mpumalanga Province are flourishing and are also a main attraction for international tourists (Adlam, 2009).

The Mpumalanga Province is seen as the main centre of South Africa's coal mining sector (Adlam, 2009). Because this province is situated within the Bushveld Igneous Complex (one of the worlds' most mineralised regions), it is home to minerals such as vanadium, platinum, nickel and chromium. In addition to this, petro-chemical, stainless steel, ferrochrome and resource driven industries are prosperous in the province and this leaves scope for further projects and investments (Adlam, 2009).

The following section will provide an overview of the demographics, labour, education and development of the Mpumalanga Province as this form a part of the socio-

economic profile of the province. Each of the above factors will be discussed separately. This section will be discussed briefly, because the focus of this chapter is on the economic activity and the economic sectors of the Mpumalanga Province.

3.3 SOCIO-ECONOMIC PROFILE OF THE MPUMALANGA PROVINCE

The purpose of this section is to provide a brief description of the socio-economic structure of the Mpumalanga Province. The information used to supply the tables and figures was collected from the Global Insight Regional Explorer (ReX) and Statistics South Africa databases and will provide this section with the needed information to determine the current socio-economic structure in the province. This section will focus on the demographics, labour, education and development aspects of the Mpumalanga Province.

3.3.1 Demographics

3.3.1.1 Population

Population, a basis of development, has an effect on the supply of labour, only if utilised in the correct manner, and influences productivity and assets which is a determinant of economic growth (Lindhauer, *et al*., 2006:260).

Table 3.1 depicts that Mpumalanga has been experiencing positive population growth rates from 1996 to 2010. Mpumalanga's population grew by a small magnitude, which in the current circumstances in South Africa, is relatively good.

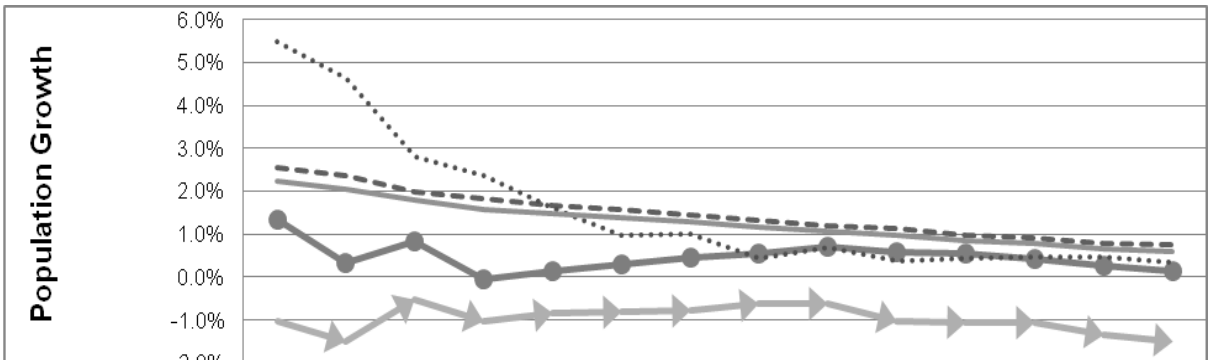
Table 3.1: Population figures in Mpumalanga, 1996, 2000, 2005 & 2010

	National Total		Mpumalanga	
Year	**Number of people**	**% share of total population**	**Number of people**	**% share of total population**
1996	41,8 million	100	3,1 million	7.52
2000	44,5 million	100	3,3 million	7.62
2005	47,2 million	100	3,6 million	7.66
2010	48,8 million	100	3,6 million	7.70

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012.

By the end of 2010, Mpumalanga had a population of 3.7 million, which is about 7.23% of the total population in South Africa (Statistics South Africa, 2011:2). Between 1996 and 2010 the population in Mpumalanga increased by approximately six hundred thousand individuals.

Figure 3.2: Population growth by race group in Mpumalanga, 1997-2010



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
African	2.5%	2.3%	2.0%	1.8%	1.7%	1.6%	1.5%	1.3%	1.2%	1.1%	1.0%	0.9%	0.8%	0.7%
White	-1.0%	-1.5%	-0.5%	-1.0%	-0.8%	-0.8%	-0.8%	-0.6%	-0.6%	-1.0%	-1.1%	-1.1%	-1.3%	-1.5%
Coloured	1.3%	0.3%	0.8%	0.0%	0.1%	0.3%	0.4%	0.6%	0.7%	0.6%	0.5%	0.4%	0.2%	0.1%
Asian	5.5%	4.6%	2.8%	2.4%	1.6%	1.0%	1.0%	0.5%	0.7%	0.4%	0.4%	0.5%	0.5%	0.4%
Mpumalanga	2.2%	2.0%	1.8%	1.6%	1.5%	1.4%	1.3%	1.2%	1.1%	1.0%	0.8%	0.8%	0.6%	0.6%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012.

Figure 3.2 shows that Mpumalanga's population growth rate declined from 2.2 % in 1997, to 0.6 % in 2010 for all racial groups. The race group with the highest growth rate in 1997 was the Asian population, followed by the African, Coloured and White population. The African population growth rates exceeded the provincial average. All of the race groups experienced negative growth till 2010, except the Asian population that experienced a 0.2% increase in its growth rate. The White population is the only race group that had a negative growth rate during 1997 (-1.0%) and it declined to minus 1.5 % in 2010. The population growth rates experienced amongst different race groups reflect that diversity amongst race groups in Mpumalanga and overall South Africa is increasing.

3.3.2 Labour profile

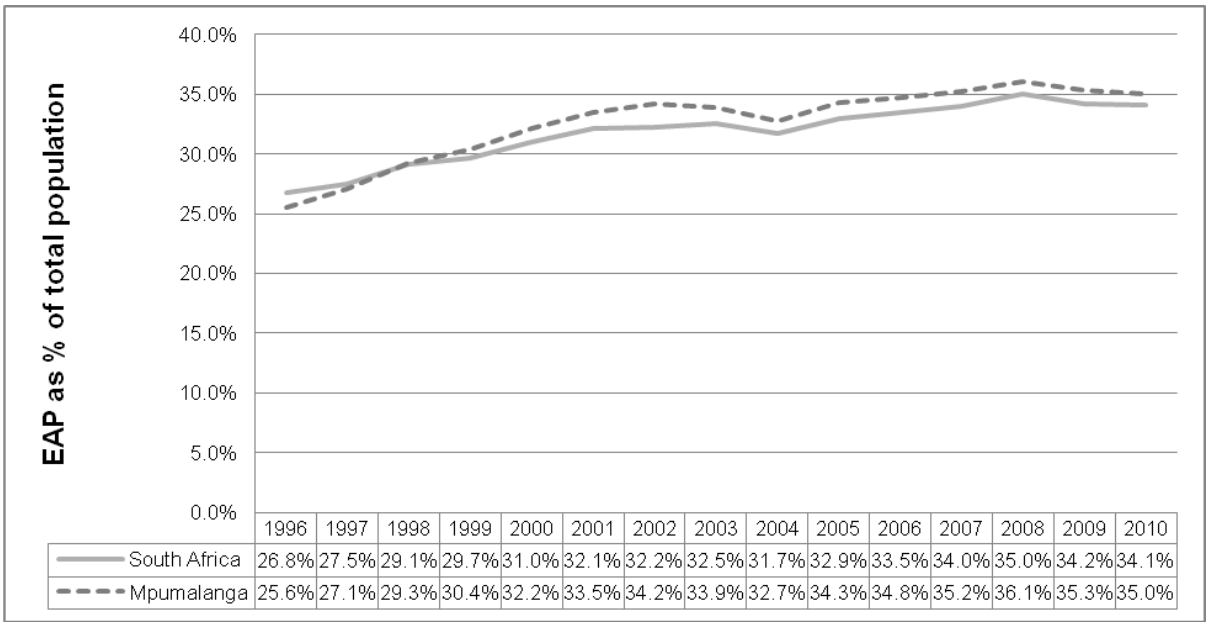
The labour profile is comprised of the entire economically active population and the unemployed people in the Mpumalanga Province. Regardless of favourable growth rates experienced in the South African economy over the past 20 years,

unemployment is still a recurring issue in South Africa. A concern that must be taken into consideration is that, even though the South African labour force is growing, there is still a lack of employment which in result causes unemployment (Hodge, 2009:490).

3.3.2.1 Employment

In 2010 South Africa had an economically active population (EAP) of approximately 16.6 million people, with 1.3 million employed in the Mpumalanga Province (Global Insight – ReX, January 2012).

Figure 3.3: Economically Active Population (EAP) in Mpumalanga, 1996-2010



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	26.8%	27.5%	29.1%	29.7%	31.0%	32.1%	32.2%	32.5%	31.7%	32.9%	33.5%	34.0%	35.0%	34.2%	34.1%
Mpumalanga	25.6%	27.1%	29.3%	30.4%	32.2%	33.5%	34.2%	33.9%	32.7%	34.3%	34.8%	35.2%	36.1%	35.3%	35.0%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

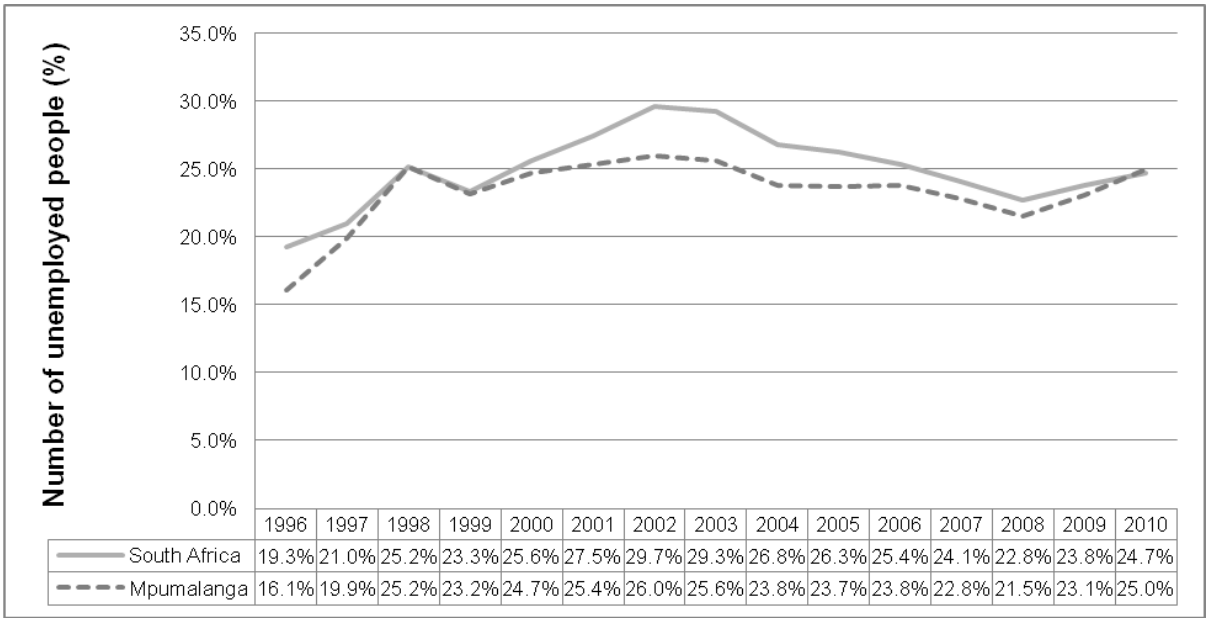
Figure 3.3 illustrates the percentage of the economically active population in South Africa and Mpumalanga. Mpumalanga's EAP increased from 25.6% in 1997 to 36.1% in 2008 and decreased to 35% in 2010. In 2000 Mpumalanga's economically active population exceeded the South African average and remained higher than the national average till 2010.

3.3.2.2 Unemployment

Unemployment is one of the main concerns of South Africa, because it is a constraint to the economic growth and development of South Africa as well as to the Mpumalanga Province (Mahlangu, 2010:18). Unemployment affects the province's potential economic growth and adversely limits growth.

Figure 3.4 illustrates the unemployment rate in South Africa and the Mpumalanga Province. In South Africa the unemployment rate fluctuated over the time period 1996 to 2010, reaching a maximum in 2002 of 29.7% and thereafter showing a decline to 24.7% in 2010. This was also the case in the Mpumalanga Province. The unemployment rate in Mpumalanga fluctuated over the time period 1996 to 2010, reaching a maximum in 2002 of 26%, declining to 23.7% in 2005 and increasing by 0.1 per cent in the next year.

Figure 3.4: Unemployment rate in Mpumalanga, 1996-2010



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	19.3%	21.0%	25.2%	23.3%	25.6%	27.5%	29.7%	29.3%	26.8%	26.3%	25.4%	24.1%	22.8%	23.8%	24.7%
Mpumalanga	16.1%	19.9%	25.2%	23.2%	24.7%	25.4%	26.0%	25.6%	23.8%	23.7%	23.8%	22.8%	21.5%	23.1%	25.0%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

The unemployment rate decreased until 2008 (21.5%) and increased noticeably to 25% in 2010. This increase shows that unemployment is still a major concern in South Africa and needs to be addressed through policy instruments. Unemployment

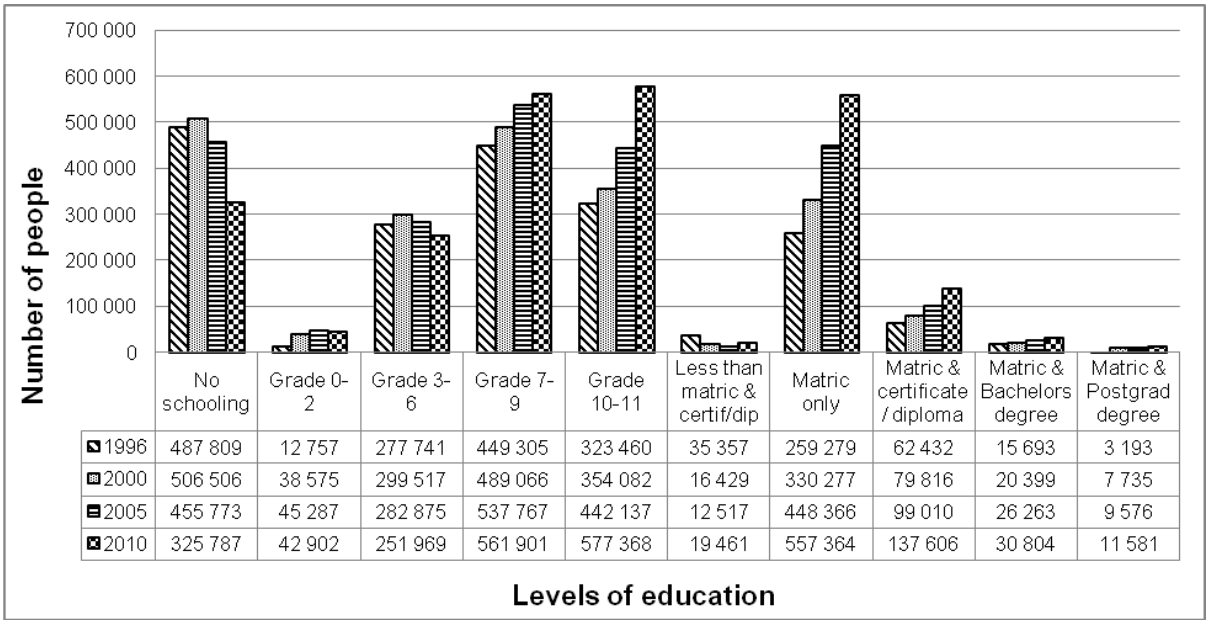
causes skills to be misplaced into sub-optimal sectors in a province, usually illicit sectors such as illegal trade.

3.3.3 Education

A positive correlation exists between the levels of education and economic growth, as higher employment growth rates exist amongst those with higher education levels (Mpumalanga Department of Economic Development and Planning, 2009:32). It is therefore an imperative to analyse education in the Mpumalanga Province so that important information regarding employment levels of the workforce and potential employment growth can be given.

Figure 3.5 illustrates the education levels of those aged 15 and higher over a fifteen year period between 1996 and 2010 in the Mpumalanga Province.

Figure 3.5: Highest level of education (age 15+) in Mpumalanga, 1996, 2000, 2005 & 2010



	No schooling	Grade 0-2	Grade 3-6	Grade 7-9	Grade 10-11	Less than matric & certif/dip	Matric only	Matric & certificate / diploma	Matric & Bachelors degree	Matric & Postgrad degree
1996	487 809	12 757	277 741	449 305	323 460	35 357	259 279	62 432	15 693	3 193
2000	506 506	38 575	299 517	489 066	354 082	16 429	330 277	79 816	20 399	7 735
2005	455 773	45 287	282 875	537 767	442 137	12 517	448 366	99 010	26 263	9 576
2010	325 787	42 902	251 969	561 901	577 368	19 461	557 364	137 606	30 804	11 581

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

Unschooled persons, 15 years and higher, increased to 506 thousand in 2000 and declined to 325 thousand persons - showing a decline in enrolment, which reflects poorly on the education system. Amongst grade zero to two the persons increased from 12 thousand in 1996 to 42 thousand in 2010. The number of people with grade

three to six slightly increased to 299 thousand in 2000 and decreased to 251 thousand in 2010. The number of persons with an education level of grade seven to nine education increased by 112 thousand between 1996 and 2010. Persons with no matric and certificate/diploma decreased with 15 thousand in the fifteen year period whilst persons with matric only, increased by 298 thousand between 1996 and 2010. Persons with an education level of matric and certificate/diploma increased with 75 thousand between 1996 and 2010 period, whilst persons with a matric and bachelors degree increased by 15 thousand over the same time period. Finally, persons with an education level of matric and post graduate degree increased by 8 thousand between 1996 and 2010. The education levels in the Mpumalanga Province are overall sufficient for economic growth.

High improvements were experienced in the matric and post graduate degree category which more than three times doubled between 1996 and 2010 – showing that effort is being placed on education achieved positive outcomes as seen by the increases in this category. This increase is a valuable asset for South Africa which is not utilised to its full extent as there is still a shortage of jobs for skilled students. A cause of concern is the education level of no schooling which is still very high.

The following section discusses the development aspects of the Mpumalanga Province and will focus on the Human Development Index (HDI), Gini-coefficient and subsequently poverty levels.

3.3.4 Development aspects

3.3.4.1 Human Development Index (HDI)

The Human Development Index is defined by Klugman of the United Nations Development Programme (2010:19) as: “development that satisfies the needs of the present without compromising the ability of future generations to meet their own needs.” The Human Development Index (HDI) is a composite and relative index that measures human development (Lindhauer, *et al.,* 2006:46). The HDI comprises the following elements:

- Life expectancy

- Education
- Income

The index lies between 0 and 1. If a country or region has an index value greater than 0.8, it is part of the High Human Development group. If the index lies between 0.5 and 0.8, the country or region is part of the Medium Human Development group. An index below 0.5 indicates a country or region that is part of the Low Human Development group (Lindhauer, *et al.,* 2006:46).

Table 3.2: Human Development Index (HDI) figures for Mpumalanga and race groups, 1996-2010

Year	South Africa	Mpumalanga	African	White	Coloured	Asian
1996	0.56	0.50	0.43	0.85	0.60	0.73
2000	0.57	0.50	0.45	0.86	0.62	0.73
2005	0.58	0.52	0.47	0.87	0.63	0.77
2010	0.56	0.50	0.46	0.85	0.62	0.75

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

Table 3.2 depicts that Mpumalanga's HDI remained relatively constant between 1996 and 2000. It slightly changed to 0.52 in 2005 and decreased to 0.50 in 2010. South Africa's HDI improved faster than Mpumalanga's HDI score from 1996 to 2010. This improvement depicts that the life expectancy, literacy and standard of living in South Africa has improved. South Africa, as well as Mpumalanga, is part of the Medium Human Development group. A critical assessment of the HDI, taking into account the race, reveals substantial gaps between the different groups in the province. The HDI for the White population (0.85) was the highest in 2010, followed by the Asian (0.75) and coloured (0.62) population.

The race group with the lowest HDI score was the African (0.46) population. Even though there was a positive change in HDI in the African population, new incentives put in place by the South African government such as the policy of black empowerment equity, is still not doing enough to increase the HDI of the African population. In 2005 all four of the racial groupings as well as the Mpumalanga's total HDI score exceeded the scores in 2010. This decline reflects negatively on the

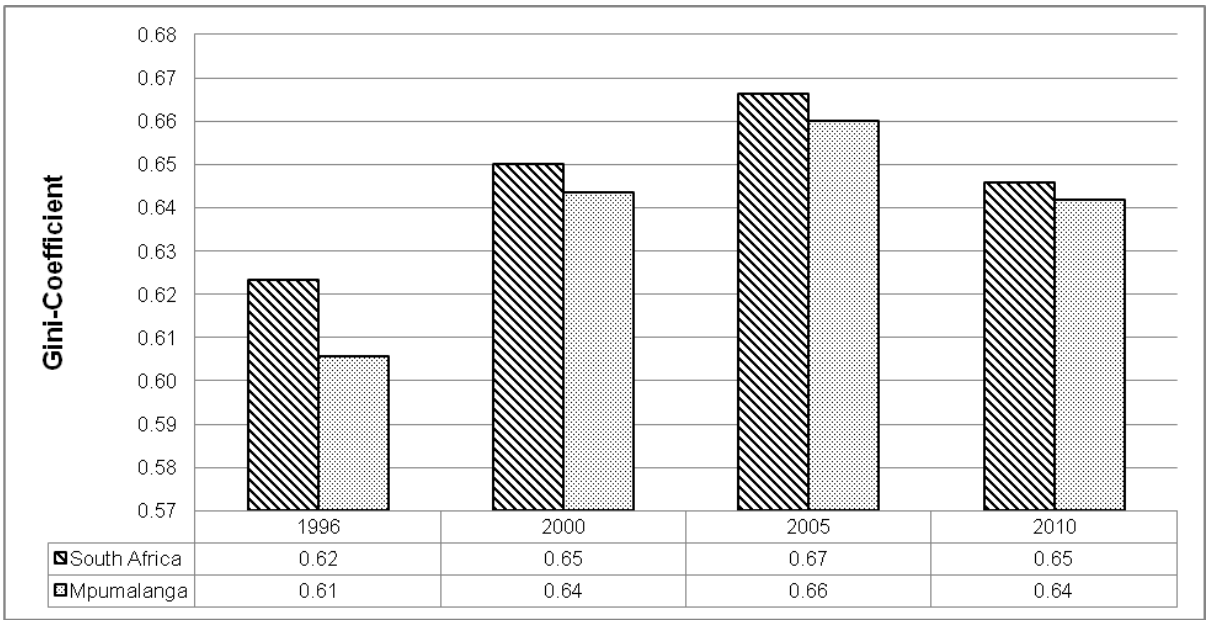
Mpumalanga Province and overall in South Africa, showing that literacy, income and life expectancy has declined.

3.3.4.2 Gini-coefficient

The Gini-coefficient is a measure of income or wealth distributions amongst the population. The coefficient varies from 0 to 1. If there is perfect income distribution or equality, all households earn equal income and the Gini-coefficient will be zero. The Gini-coefficient will be one (Lindhauer, *et al.,* 2006:196) if one household earns all the income and another household earns nothing (perfectly unequal).

The Gini-coefficient of both South Africa and Mpumalanga stayed close together between 1996 and 2010. The Gini-coefficient for Mpumalanga increased from 0.61 in 2006 to 0.64 to 2010. Because all of the scores are nearer to one, this shows that most of the wealth or income is earned by only a fewer households relative to the population.

Figure 3.6: Gini-Coefficient for Mpumalanga, 1996, 2000, 2005 & 2010



	1996	2000	2005	2010
South Africa	0.62	0.65	0.67	0.65
Mpumalanga	0.61	0.64	0.66	0.64

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

The issue of unequal wealth distribution amongst households is a difficult issue to address as different points of view exist amongst households. For example, the

households with a high income and wealth would not necessarily subdue their income to households with less income.

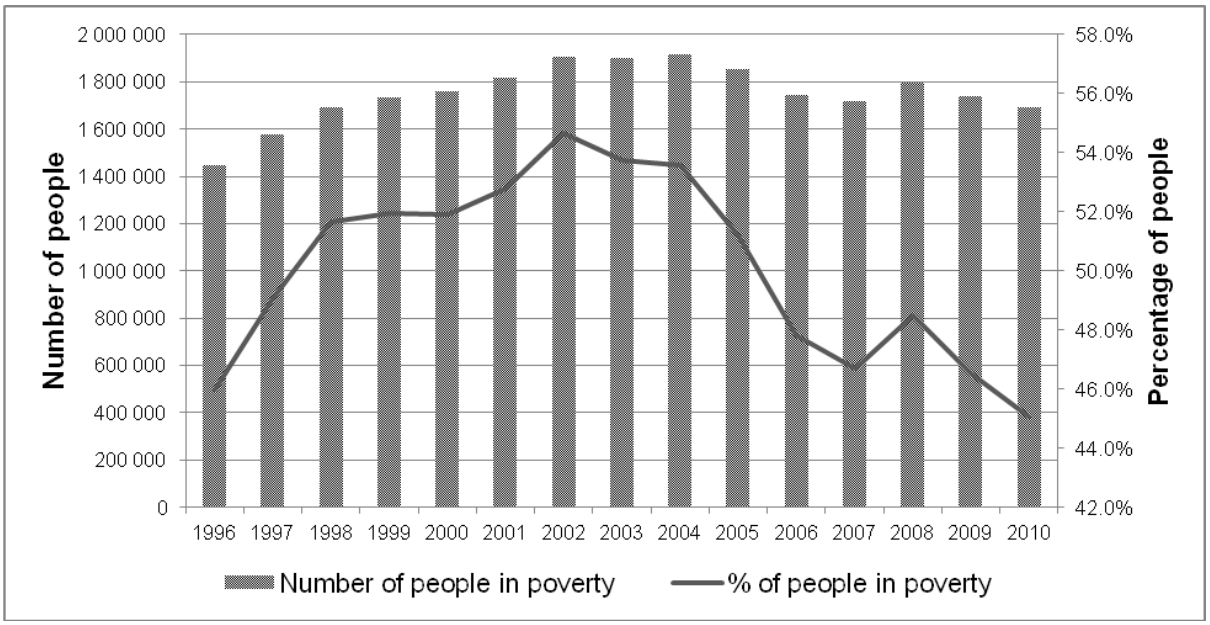
World-wide greater levels of equality are associated with higher levels of development and economic growth (Smith & Todaro, 2003:200-203).

3.3.4.3 Poverty

Poverty affects half of the world and is a situation that is a threat to most third world countries (Pogge, 2005:1). Income poverty is described as the lack of the necessary income to purchase necessities.

Figure 3.7 illustrates that in 2010 there were 1.69 million people living in poverty in the Mpumalanga province. This is almost 45% of the population in the province.

Figure 3.7: People living in poverty in Mpumalanga, 1996, 2000, 2005 & 2010



Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

The poverty levels fluctuated over the fifteen year period. The highest peak of people living in poverty was in 2007 with 1.71 million. Even though the number of people living in absolute poverty in Mpumalanga increased in 2008, it declined in 2010.

Figure 3.7 also shows the percentage of people living in poverty in Mpumalanga. The poverty rate was measured at 45.1% in 2010. This is lower than the percentage in 1996 (46%). The highest percentage of people living in poverty was 54.7% in 2002.

Although the percentage of people living in poverty declined, it is still high and more needs to be done to address this problem in the Mpumalanga Province.

Section 3.3 provided an overview of the socio-economic conditions of the Mpumalanga Province. This section showed that Mpumalanga, like the rest of South Africa, has high poverty, high population and growth rates and high unemployment rates. On the other hand, Mpumalanga has also been experiencing high education, employment and overall human development levels.

The following section will focus on the economic activity and sector performance of the Mpumalanga Province and derive Mpumalanga's economic position relative to other provinces.

3.4 ECONOMIC ACTIVITY AND SECTOR PERFORMANCE OF THE MPUMALANGA PROVINCE

The most important element of this current chapter is this section which provides an overview of the economic activity of the Mpumalanga Province and elucidating on how much this province contributes towards the South African economy.

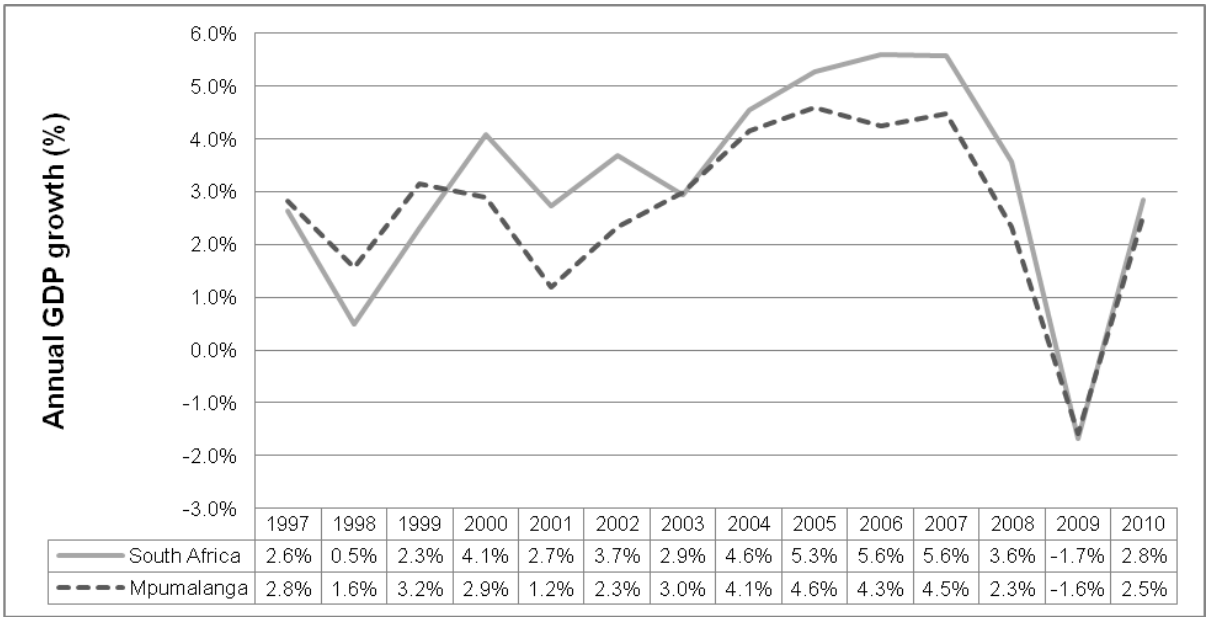
3.4.1 Economic performance of the Mpumalanga Province

3.4.1.1 Gross Domestic Product (GDP) growth

The gross domestic product (GDP) is defined as a country's total final output of goods and services (Smith & Todaro, 2003:796). These goods and services must be produced within the country's borders, by its residents and non-residents, within a year.

Figure 3.8 depicts the GDP growth of South Africa and the Mpumalanga Province. Mpumalanga's share to the South African economy showed a decrease from 2.8% in 1997 to minus 1.6% in 2009. The reason for this drastic decline can be blamed on the economic downturn in the world economy, which caused a negative growth rate ripple effect on all the worlds' global markets (Dlamini, 2009:7). The GDP growth for the province increased with 2.5% in 2010. Mpumalanga's GDP growth exceeded South Africa's GDP growth till 1999 and also in 2003.

Figure 3.8: GDP growth in Mpumalanga, 1997-2010



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	2.6%	0.5%	2.3%	4.1%	2.7%	3.7%	2.9%	4.6%	5.3%	5.6%	5.6%	3.6%	-1.7%	2.8%
Mpumalanga	2.8%	1.6%	3.2%	2.9%	1.2%	2.3%	3.0%	4.1%	4.6%	4.3%	4.5%	2.3%	-1.6%	2.5%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

The growth from 2009 to 2010 is a positive sign that the economy is stabilising after the 2008 global economic crisis.

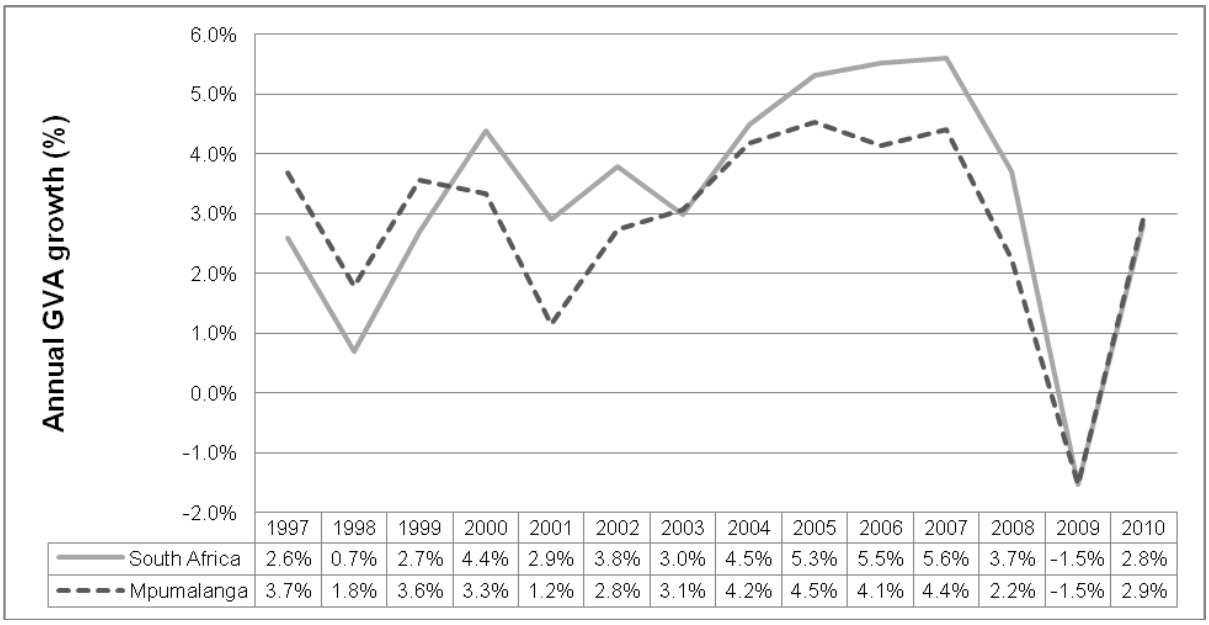
3.4.1.2 Gross Value Added (GVA) growth by Mpumalanga

Gross value added (GVA) is defined as the measure of the GDP contribution made by an industry and is calculated by deducting value of intermediate consumption by value of output (Organisation for Economic Co-Operation and Development (OECD), 2001).

Figure 3.9 illustrates the GVA growth of South Africa and the Mpumalanga Province. The gross value addition growth in Mpumalanga fluctuated from 1997 to 2001 and

increased to a peak in 2007 (4.4%). It declined severely to minus 1.5% in 2009 and increased steadily to 2.9% in 2010. Mpumalanga's GVA growth also exceeded South Africa's average GVA growth until 1999 (3.6%), in 2003 (3.1%) and also in 2010 (2.9%).

Figure 3.9: GVA growth in Mpumalanga, 1997-2010



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	2.6%	0.7%	2.7%	4.4%	2.9%	3.8%	3.0%	4.5%	5.3%	5.5%	5.6%	3.7%	-1.5%	2.8%
Mpumalanga	3.7%	1.8%	3.6%	3.3%	1.2%	2.8%	3.1%	4.2%	4.5%	4.1%	4.4%	2.2%	-1.5%	2.9%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

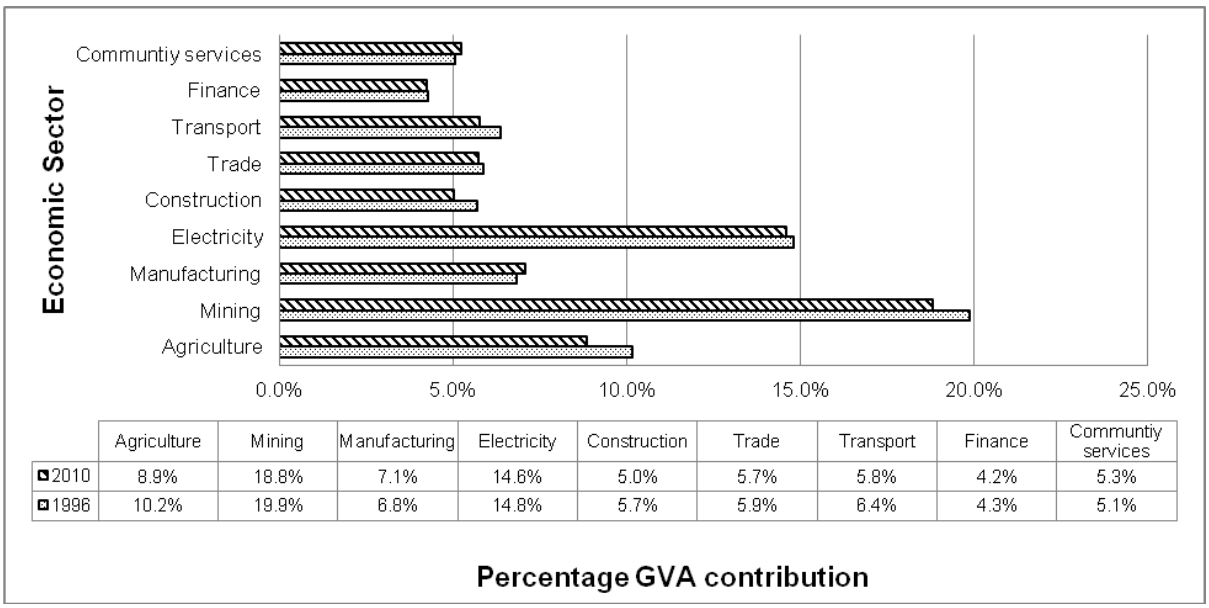
3.4.1.3 Sectoral contribution and performance

Figure 3.10 depicts the composition of economic activity for the Mpumalanga Province.

The largest contributor in 2010 was mining (18.9%), owing to the vast endowment of minerals (See Section 3.5.1.2), followed by electricity generation (14.6%) (See Section 3.5.1.4), agriculture (8.9%) (See Section 3.5.1.1) and manufacturing (7.1%). (See Section 3.5.1.3.) Figure 3.10 compares the economic sectors against each other in a 15 year time period, 1996 till 2010. The sectors that contributed more to Mpumalanga's economy in 1996 than in 2010 were: agriculture (10.2%), mining (19.9%), electricity (14.8%), construction (5.7%), trade (5.9%), transport (6.4%), finance (4.3%) and community services (7.3%) - that is eight out of the nine sectors. With the economic downturn that South Africa has been experiencing from 2008 to

mid 2010, it is understandable that in the year 1996, the sectors contributed more to the economy than in 2010.

Figure 3.10: Mpumalanga's contribution to South Africa's GVA (constant prices) by sector, 2000 & 2008



	Agriculture	Mining	Manufacturing	Electricity	Construction	Trade	Transport	Finance	Communtiy services
2010	8.9%	18.8%	7.1%	14.6%	5.0%	5.7%	5.8%	4.2%	5.3%
1996	10.2%	19.9%	6.8%	14.8%	5.7%	5.9%	6.4%	4.3%	5.1%

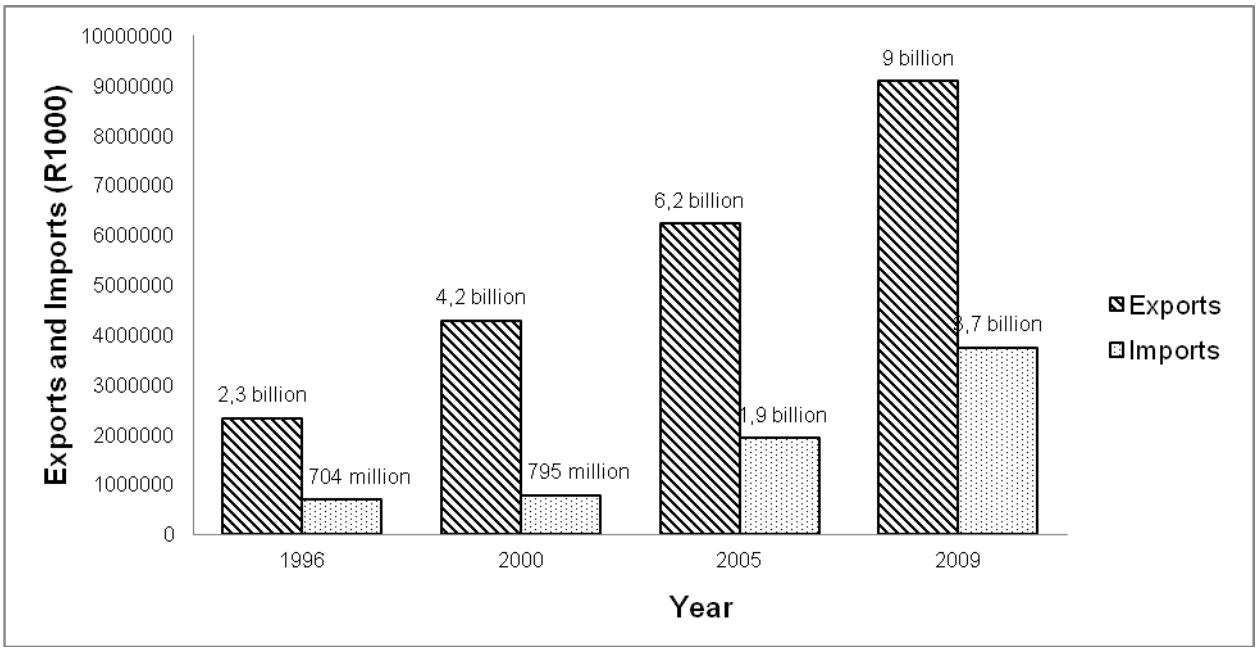
Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

3.4.1.4 Trade within the Mpumalanga Province

Figure 3.11 shows the exports and imports of Mpumalanga. This figure shows that exports exceeded imports (positive trade balance) in all of the years, which is a good sign, because less imports show Mpumalanga is able to produce locally, provide for themselves and also export locally produced products.

This also ensures a positive trade balance. The total exports for 2009 were R9 billion and total imports for 2009 amounted to R3.7 billion. Since 1996 the exports and imports for South Africa and the Mpumalanga grew significantly. The increase in export and import figures over the past couple of years could be as a result of the end of the apartheid regime after 1994, as well as South Africa opening their borders for imports and also focussing on exporting products for which the country has a comparative advantage. Table 3.3 depicts the actual trade balance figures for Mpumalanga and South Africa. Mpumalanga's trade balance grew from R1.6 billion in 1996 to R8.9 billion in 2008 and decreased to 5 billion in 2009.

Figure 3.11: Exports and Imports of Mpumalanga, 1996, 2000, 2005 & 2009



Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

The decrease in trade in the province may be a result of the uncertainty in the economy that developed during the economic crisis of 2008.

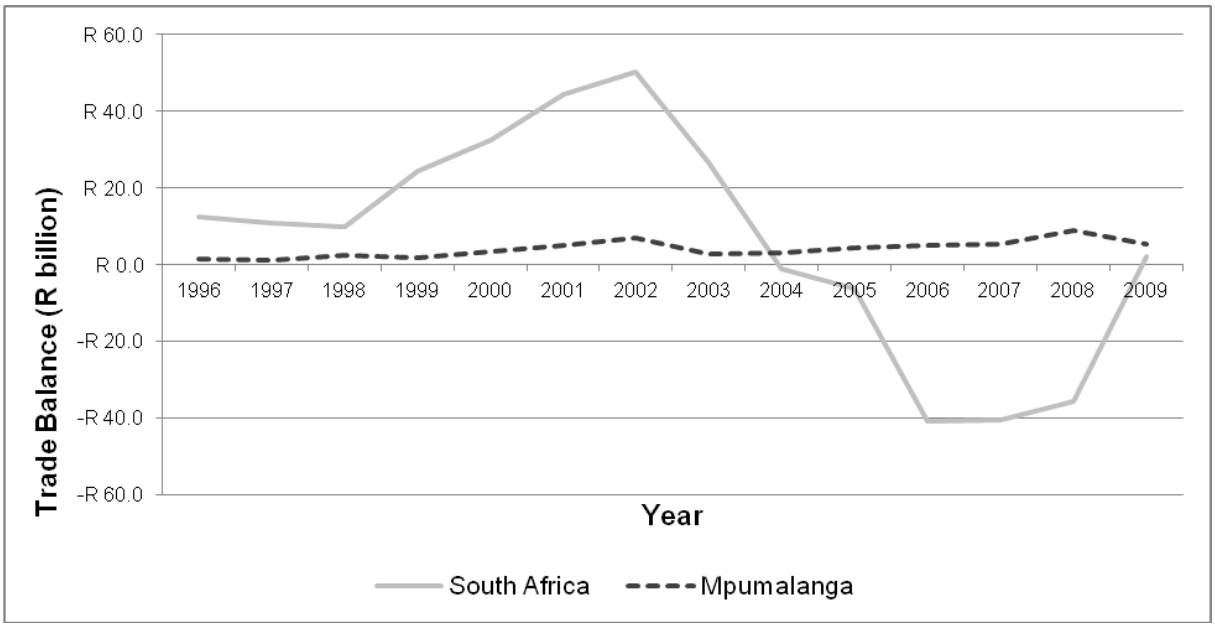
Table 3.3: Trade balance figures for Mpumalanga, 1996-2009

Year	South Africa (R)	Mpumalanga (R)
1996	R12.4 billion	R1.6 billion
1997	R10.7 billion	R1.3 billion
1998	R10.1 billion	R2.4 billion
1999	R24.5 billion	R1.8 billion
2000	R32.6 billion	R3.5 billion
2001	R44.6 billion	R5.0 billion
2002	R50.2 billion	R6.9 billion
2003	R26.7 billion	R2.8 billion
2004	-R1.2 billion	R3.2 billion
2005	-R6.4 billion	R4.3 billion
2006	-R40.9 billion	R5.1 billion
2007	-R40.5 billion	R5.5 billion
2008	-R35.6 billion	R9.0 billion
2009	R2.3 billion	R5.3 billion

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

Figure 3.12 illustrates a line graph of table 3.3 and from this it can be seen that South Africa's trade balance exceeded Mpumalanga's trade balance until 2004. With Mpumalanga's booming economy, Mpumalanga's trade balance has exceeded South Africa's trade balance and has remained positive - relative to the national balance since 2004. The cause of this positive balance is a result of the increasing Mpumalanga Province exports and the strong mining sector.

Figure 3.12: Trade balance of Mpumalanga, 1996-2009



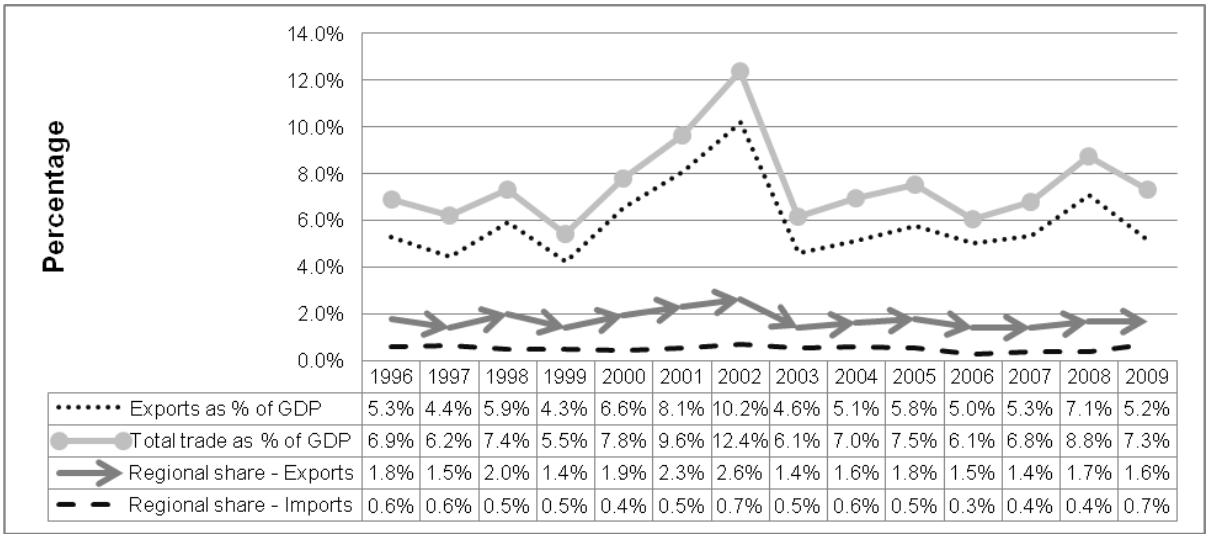
Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

Figure 3.13 shows Mpumalanga's exports as a percentage of GDP, total trade as a percentage of GDP, and the regional share of exports and imports. Mpumalanga contributed very little to South Africa's exports and imports in 2009 with 1.6% and 0.7%, respectively, which were marginally smaller than in 1996 with exports being 1.8% and imports being 0.6%. Mpumalanga's contribution to South Africa's total trade was 7.3% in 2009 and is higher than in 1996 (6.9%). Mpumalanga's exports as a percentage of GDP were 5.3% in 1996 and 5.2% in 2009, and showed a growing trend.

To conclude, this section provided an insight into the economic activity and sector performance of the Mpumalanga Province. The data used was from 1996 to 2010. The economic activity of the Mpumalanga Province has been experiencing

favourable growth over the past 15 years. Even though down turns were experienced during some points in time, the overall performance of the Mpumalanga Province was good. When compared to the South African growth, the Mpumalanga Province is not far behind, meaning that the province has been experiencing rapid growth in some areas.

Figure 3.13: International trade in Mpumalanga, 1996-2009



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Exports as % of GDP	5.3%	4.4%	5.9%	4.3%	6.6%	8.1%	10.2%	4.6%	5.1%	5.8%	5.0%	5.3%	7.1%	5.2%
Total trade as % of GDP	6.9%	6.2%	7.4%	5.5%	7.8%	9.6%	12.4%	6.1%	7.0%	7.5%	6.1%	6.8%	8.8%	7.3%
Regional share - Exports	1.8%	1.5%	2.0%	1.4%	1.9%	2.3%	2.6%	1.4%	1.6%	1.8%	1.5%	1.4%	1.7%	1.6%
Regional share - Imports	0.6%	0.6%	0.5%	0.5%	0.4%	0.5%	0.7%	0.5%	0.6%	0.5%	0.3%	0.4%	0.4%	0.7%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

From the all of the above information one can gather that the Mpumalanga Province is a positive growing and stable province of South Africa and can offer domestic and international investors, as well as foreign markets, with realistic export opportunities.

The following section is going to focus on the specific sectors of the Mpumalanga Province.

3.5 ECONOMIC SECTORS OF THE MPUMALANGA PROVINCE

The economic sectors of the Mpumalanga Province are classified under the following sub-headings: agriculture, mining, manufacturing, electricity plus gas and water, construction, transport and the financial sector. Each sub-heading will be discussed separately and some attention will be given to the infrastructure in the Mpumalanga Province.

3.5.1 Economic sectors

3.5.1.1 Agriculture

Agriculture is one of South Africa's important contributing sectors to the economy and is a key provider for employment in the country (Mahlangu, 2009:24; Mpumalanga Provincial Government Finance Department, 2011:48). In the Mpumalanga Province the agricultural sector is a large sector and provides employment to approximately 104 thousand individuals in the province. The agricultural sector in the Mpumalanga Province produces a variety of products. In the Southern and Northern Highveld field crops, such as grain sorghum, wheat, barley, sugar cane, groundnuts, maize and soybean are cultivated.

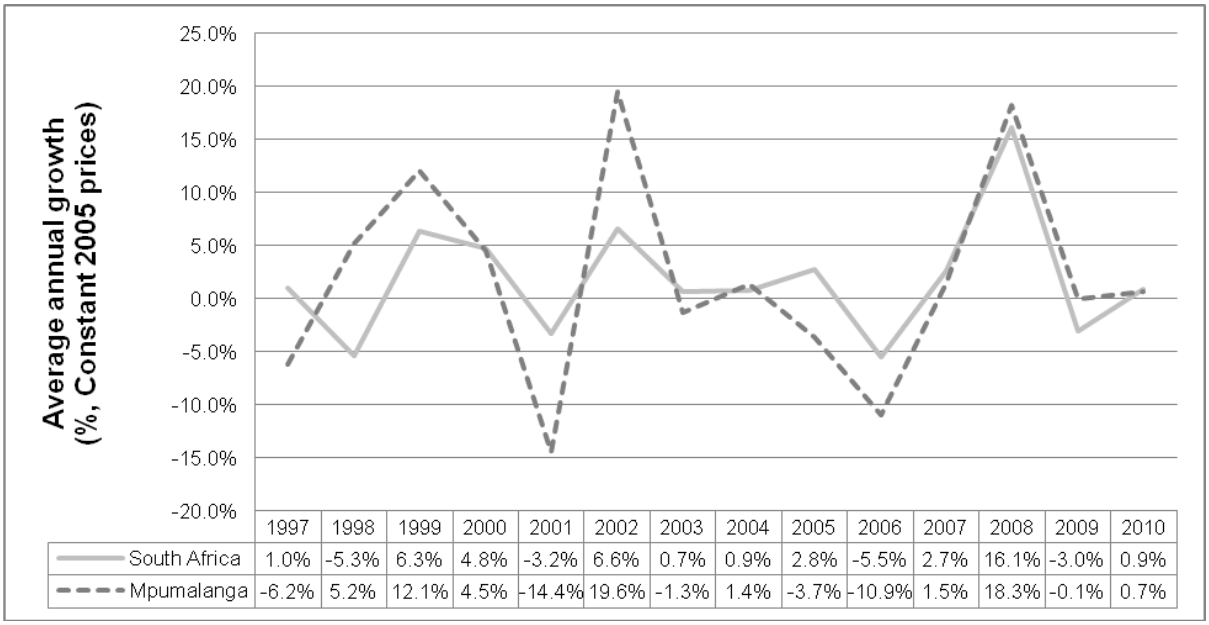
The vegetable and fruit sector in the province is high in quality and quantity. About 64% of the total horticultural products in the country are produced in the province. The largest seed potato production also takes place in this province (Mpumalanga Top Business Portfolio, 2009). In the fruit sector a variety of fruits is produced in abundance. These include citrus and subtropical fruit, such as mango, marula, avocado, litchi, banana, paw-paw, guava and granadilla. Other products produced in this province include paprika, pepperdews, coffee, tea and deciduous fruit. Nelspruit, in the Mpumalanga Province, is the second largest citrus producing region in South Africa and contributes one third of the country's orange exports (Mpumalanga Top Business Portfolio, 2009). Other products produced in this province include nuts, sugar, tobacco and wine.

The Lowveld escarpment is the primary commercial forest area in South Africa and accounts for about 40% of the forestry plantations in South Africa. The softwood (52%) and the hardwood species (48%) plantations are evenly distributed with plantations of exotic trees - consisting of pine, eucalyptus and Australian wattle - in Mpumalanga (Mpumalanga Top Business Portfolio, 2009).

Figure 3.14 depicts the average annual growth of agriculture and production in Mpumalanga from 1997 to 2010. From the graph it can be seen that fluctuations occurred over the time period with negative growth rates in 1997 (-6.2%); 2001 (-

14.4%); 2003 (-1.3%); 2005 (-3.7%) and 2006 (-10.9%). This may be a result of the unfavourable climate conditions such as drought. The growth rate of agriculture in Mpumalanga for 2008 was 0.7%. This percentage is only 0.02% lower than the South African percentage (0.9%).

Figure 3.14: Average annual growth (%) of agriculture in Mpumalanga, 1997-2010



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	1.0%	-5.3%	6.3%	4.8%	-3.2%	6.6%	0.7%	0.9%	2.8%	-5.5%	2.7%	16.1%	-3.0%	0.9%
Mpumalanga	-6.2%	5.2%	12.1%	4.5%	-14.4%	19.6%	-1.3%	1.4%	-3.7%	-10.9%	1.5%	18.3%	-0.1%	0.7%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

3.5.1.2 Mining

An important feature in the mining and quarrying sector of the Mpumalanga Province is the Bushveld Igneous Complex. This complex spreads across the Mpumalanga, Gauteng, Northern and North Western Provinces of South Africa. Large-scale deposits of chromite, magnetite and vanadium exist in the Bushveld Igneous Complex - all along the northern limb - form the basis for a large ferro-alloy industry in the Witbank, Middelburg and Lydenburg areas (Mpumalanga Top Business Portfolio, 2009). High grade metallurgical manganese ore is generally smelted and refined to produce ferromanganese, an alloy that has long been used in the processing of steel. Manganese dioxide is a powerful oxidising agent with a variety of chemical applications, including its usage in dry cell batteries and in acid leaching to

recover uranium and zinc from their ores (Mpumalanga Top Business Portfolio, 2009).

Small-scale mining of gold is still taking place in the Barberton area and recent exploration in the area unearthed carlin-type deposits that have the potential for gold extraction using low-cost, low-risk heap leach technology (Mpumalanga Top Business Portfolio, 2009).

Coal mining in the Mpumalanga Province accounts for 83% of South African coal production and exports account for 28% of production (Mpumalanga Top Business Portfolio, 2009). Witbank, in the Mpumalanga Province, is the biggest coal producer in all of Africa (Mpumalanga Top Business Portfolio, 2009). South Africa has 19 official coal fields and almost 70% of recoverable reserves lie in the Highveld, Waterberg, and Witbank fields of the Mpumalanga Province (Mpumalanga Top Business Portfolio, 2009). A driving force in the province is the demand for coal for electricity generation and exploration of other minerals. This demand is placing enormous increasing pressure on the natural environment, such as the mining of non-renewable fossil fuels and burning of coal to generate electricity (Cowden, 2005).

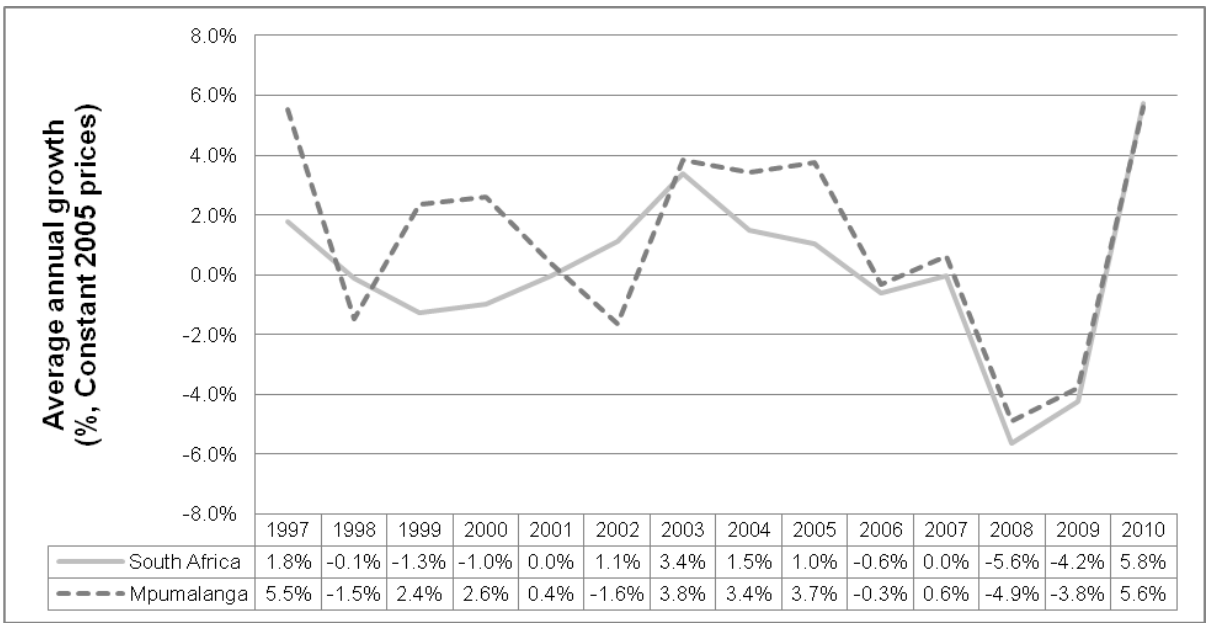
The mining industry is an important contributor to Mpumalanga's economy in terms of economic production, export and local sales revenues and employment. Mining will continue to be an important sector either independently, or as a result of its linkages with other critical sectors, such as electricity and manufacturing. There are a variety of opportunities for the establishment of new mines in the province, as well as for the further beneficiation of the minerals being mined (Mpumalanga Top Business Portfolio, 2009).

The mining industry also has negative environmental impacts and this includes the loss of biodiversity due to the transformation of natural habitats and ecosystems (Cowden, 2005). Because the mining processes usually require large amounts of water, this creates a huge strain on the available water resources. In addition, surface and groundwater pollution often results from acid mine drainage. Other

impacts include air pollution, noise pollution and the visual impact of large open cast mining operations (Cowden, 2005).

Figure 3.15 shows the average annual growth of mining activity in Mpumalanga from the years 1997 to 2010. The graph shows many fluctuations over this time period (1997 to 2010). Overall the mining sector have been experiencing positive growth rates, with negative percentages in 1998 (-1.5%); 2002 (-1.6%); 2006 (-0.3%); 2008 (-4.9%) and 2009 (-3.8%).

Figure 3.15: Average annual growth (%) of mining in Mpumalanga, 1997-2010



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	1.8%	-0.1%	-1.3%	-1.0%	0.0%	1.1%	3.4%	1.5%	1.0%	-0.6%	0.0%	-5.6%	-4.2%	5.8%
Mpumalanga	5.5%	-1.5%	2.4%	2.6%	0.4%	-1.6%	3.8%	3.4%	3.7%	-0.3%	0.6%	-4.9%	-3.8%	5.6%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

The negative percentages can be a result of fluctuating gold prices. The growth rate of agriculture in Mpumalanga for 2010 was 5.6%. The graph shows a negative trend for both Mpumalanga and South Africa for the mining sector until 2008 and an increasing growth since then.

3.5.1.3 Manufacturing

One of the large sectors that are contributing to the Mpumalanga economy, is manufacturing. It is the third largest provider of formal employment (Mpumalanga Top Business Portfolio, 2009; Mpumalanga Provincial Government Finance Department, 2011:46). The two main advantages of the manufacturing sector are

the abundance of raw materials from the agricultural, forestry and mining sectors, which are provided to the manufacturing sector as inputs. Secondly, the bulk of infrastructure such as roads, rail, energy, telecommunications and import and export facilities that are vital to the manufacturing sector, are developed as they are a necessity to the success of the sector.

Manufacturing activities in the province are clustered in proximity to the main concentrations of natural resources. In the Highveld region large-scale manufacturing include petro-chemical, stainless steel and plastics production, based on chrome, steel, vanadium and coal as the major energy source (Mpumalanga Top Business Portfolio, 2009). In the Lowveld region manufacturing is dominated by food, beverages and wood products, based on the occurrence of citrus, other sub-tropical fruits and forestry raw materials (Mpumalanga Top Business Portfolio, 2009).

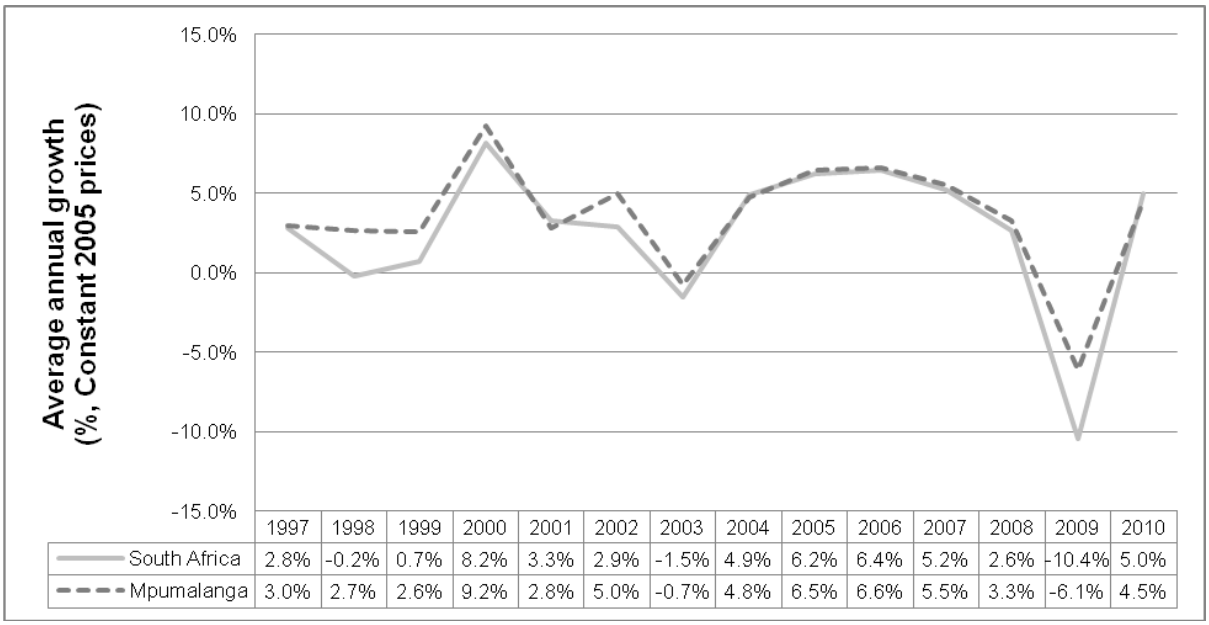
Industrial development and manufacturing have widely been regarded as the basis of economic development. The manufacturing sector has a significant multiplier effect, due to backward linkages with agriculture and mining, and forward linkages with trade, transport and communication. This combination of assets and performance has had a positive impact on the province and provides scope for added development (Mpumalanga Top Business Portfolio, 2009).

A wide variety of products are manufactured in the Mpumalanga Province and these products include: wood products, paper and pulp, bio fuels, mining products, stainless steel and jewellery. The other products are classified as non-metallic mineral products. These products include: chemicals, plastics, food and beverage, arts and crafts.

The manufacturing sector in Mpumalanga has general negative environmental impacts associated with industrial and manufacturing processes. These negative environmental impacts are a cause for concern and include depletion of natural resources and water during manufacturing processes. Additional to the aforementioned, other negative impacts include air and water pollution, the production of waste products and noise and visual impacts (State of the environment in South Africa, 2005).

Figure 3.16 depicts the average annual growth of manufacturing in Mpumalanga from the years 1997 to 2010. In 1997 Mpumalanga's growth was 0.2% higher than the South African percentage. Both South Africa and Mpumalanga have been experiencing fluctuations. In 2010, Mpumalanga had a growth rate of 4.5%, which was only 0.5% lower than the South Africa percentage growth.

Figure 3.16: Average annual growth (%) of manufacturing in Mpumalanga, 1997-2010



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	2.8%	-0.2%	0.7%	8.2%	3.3%	2.9%	-1.5%	4.9%	6.2%	6.4%	5.2%	2.6%	-10.4%	5.0%
Mpumalanga	3.0%	2.7%	2.6%	9.2%	2.8%	5.0%	-0.7%	4.8%	6.5%	6.6%	5.5%	3.3%	-6.1%	4.5%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

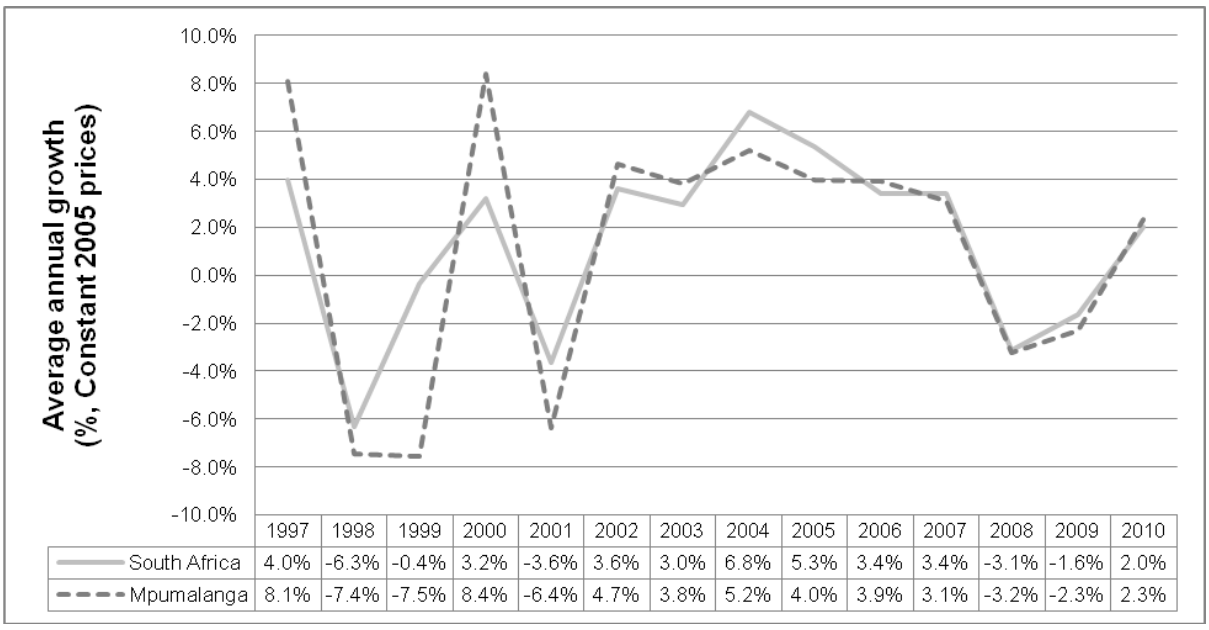
3.5.1.4 Utilities (Electricity, gas and water)

Energy is a fundamental aspect for South Africa's social and economic development. The South African energy sector contributes about 15% of GDP and employs more than 250 000 people (Cowden, 2005). Electricity is provided by Eskom, which is a state owned company and is the world's eleventh-largest power utility in terms of its generating capacity (Cowden, 2005). Natural gas, on the other hand, is not yet a major energy source for South Africa, but the South African government wants to expand its utilisation. Water is a key contributor to increasing economic activities and investment within the province. The Mpumalanga provincial government has recently started the 'Water for All' quest that aims to accelerate the eradication of water

backlogs in the province in order to meet the 2010 targets in a sustainable manner (Cowden, 2005).

Figure 3.17 illustrates fluctuations in growth rates in the electricity sector in Mpumalanga. The growth rate started off at 8.1% in 1997 and declined to minus 2.3% in 2009; then increased to 2.3% in 2010 - which is 0.3 % higher than the South African percentage.

Figure 3.17: Average annual growth (%) of electricity in Mpumalanga, 1997-2010



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	4.0%	-6.3%	-0.4%	3.2%	-3.6%	3.6%	3.0%	6.8%	5.3%	3.4%	3.4%	-3.1%	-1.6%	2.0%
Mpumalanga	8.1%	-7.4%	-7.5%	8.4%	-6.4%	4.7%	3.8%	5.2%	4.0%	3.9%	3.1%	-3.2%	-2.3%	2.3%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

Once again the declining growth rate could be the result of the economic downturn in the economy in 2009, following the economic crisis in the United States of America.

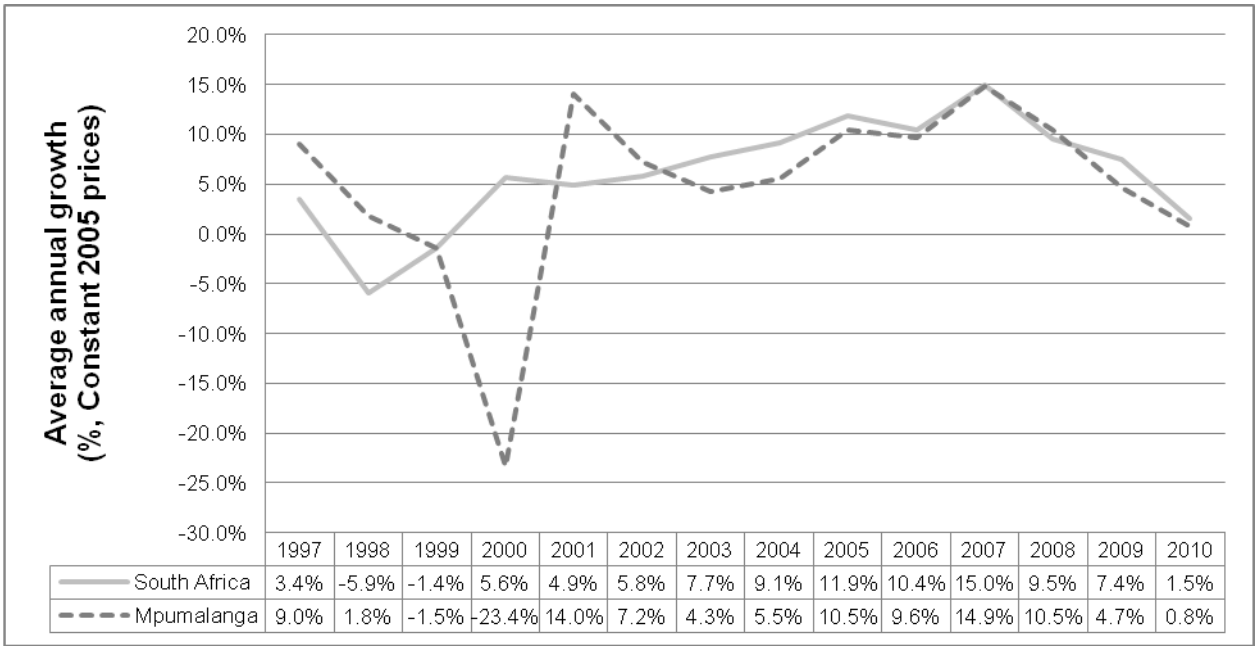
3.5.1.5 Construction

Construction is one of the fastest growing sectors in the local economy of the Mpumalanga Province. Developing infrastructure is the core to South Africa's objective of economic growth (Mpumalanga Top Business Portfolio, 2009). Consequently the construction sector is a dynamic part of the economy. Mpumalanga has a variety of activities taking place, including road construction, civil engineering structures, and earthworks. Right through to the construction of homes

and offices, the provincial government of Mpumalanga has an infrastructural investment drive in place which will sustain this sector despite the challenge of private investment that could slow down this sector in the current economic cycle.

Figure 3.18 shows the average annual growth of the construction sector in Mpumalanga from the years 1997 to 2010.

Figure 3.18: Average annual growth (%) of construction in Mpumalanga, 1997-2010



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	3.4%	-5.9%	-1.4%	5.6%	4.9%	5.8%	7.7%	9.1%	11.9%	10.4%	15.0%	9.5%	7.4%	1.5%
Mpumalanga	9.0%	1.8%	-1.5%	-23.4%	14.0%	7.2%	4.3%	5.5%	10.5%	9.6%	14.9%	10.5%	4.7%	0.8%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

In 1997 Mpumalanga had a growth rate of 9.0% and shows a peak of 14.9% in 2007. Overall the construction sector has experienced a negative growth with a low point of minus 23.4% in 2000. The negative growth rate may be a result of the down turn in the property market during the time period. The construction sector in Mpumalanga exceeded the growth rate of South Africa only once, in 2001, with almost ten per cent and also in 2009, with one per cent.

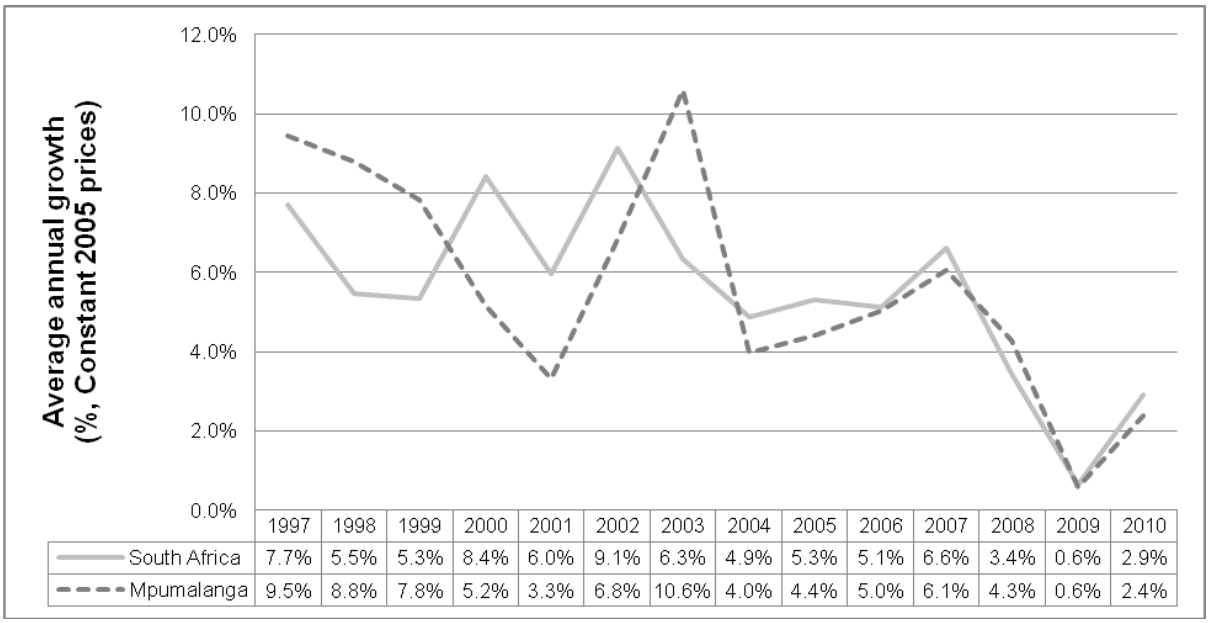
3.5.1.6 Transport

The transport, storage and communication sector is the fourth biggest industry contributor to the South African Gross Domestic Product (GDP). This industry

includes: road, rail, sea, pipe and air transport, as well as storage, freight and courier, telecoms and broadcasting. This broad sector is infrastructure dependent and therefore influenced by state investment and regulation (Cowden, 2005).

Figure 3.19 shows the average annual growth of the transport sector in Mpumalanga from the years 1997 to 2010.

Figure 3.19: Average annual growth (%) of transport in Mpumalanga, 1997-2010



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	7.7%	5.5%	5.3%	8.4%	6.0%	9.1%	6.3%	4.9%	5.3%	5.1%	6.6%	3.4%	0.6%	2.9%
Mpumalanga	9.5%	8.8%	7.8%	5.2%	3.3%	6.8%	10.6%	4.0%	4.4%	5.0%	6.1%	4.3%	0.6%	2.4%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

This graph shows an overall decline in growth in the transport sector. In 1997 Mpumalanga had a growth rate of 9.5% and ended with a decline in the growth rate of 0.6% in 2009 and increased to 2.4% in 2010. Three major declining point were in 2001 (3.3%), 2004 (4.0%) and 2009 (0.6%). Mpumalanga's transport sector managed to exceed the South African growth rate from 1997 to 1999, 2003 and 2008.

3.5.1.7 Financial Sector

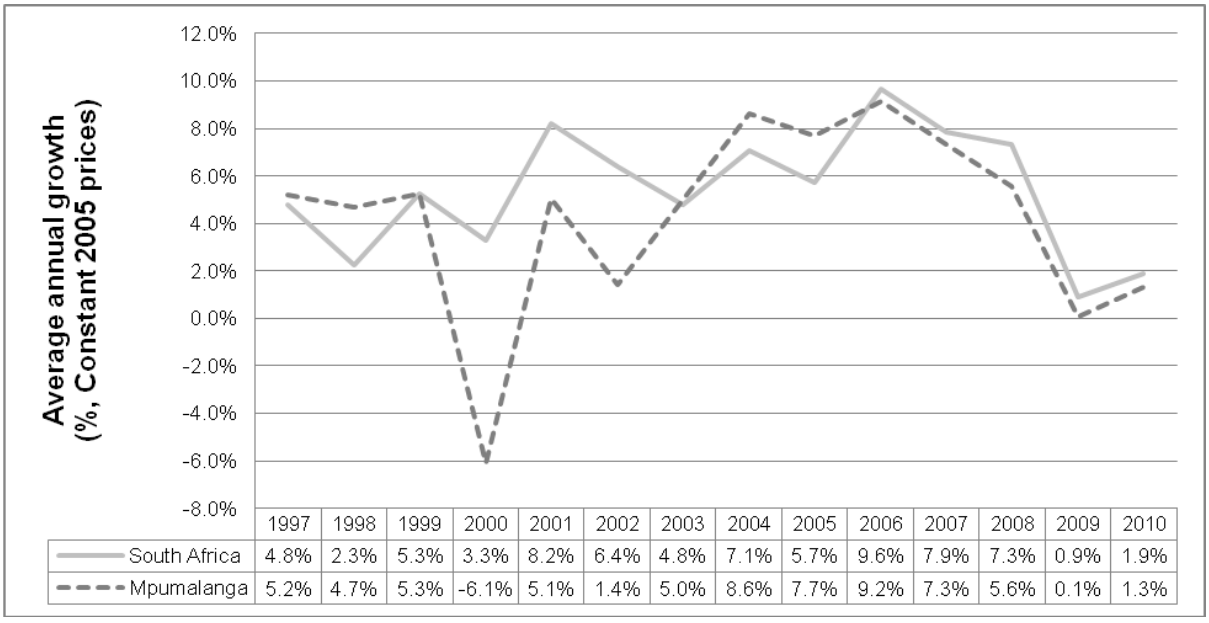
Mpumalanga is known for its sophisticated commercial and financial business structure. Together with a sound regulatory and legal framework, complemented by a broad spectrum of professional services, the financial and business sector is growing. The services sector has a strategic role in providing services to other

economic sectors, the agriculture and resource-based sector, manufacturing, as well as the knowledge and innovation sector. The services sector in the Mpumalanga province's economy has grown remarkably and is becoming a leading contributor to the GDP.

Financial services include: the banking sector, micro-financing, and business process outsourcing whereas the business support service include those services that are not central to the core competencies of a business. These include security, catering and cleaning services, the provision of office equipment, such as furniture, stationery and air conditioning, software and hardware management, staffing, marketing and recruitment, as well as consulting and bookkeeping services. Real estate is also a vast growing sector in Mpumalanga, attracting investment-driven buyers.

Nelspruit is the growth point of Mpumalanga due to the upgrading of infrastructure and an inflow of new businesses. Several blue chip companies have opened regional offices in Nelspruit since 2008, while banks and motor manufacturers have established area offices. There is also a high demand for property in Middelburg in terms of expected sustained growth, fuelled by the growing local mining industry (Mpumalanga Top Business Portfolio, 2009).

Figure 3.20: Average annual growth (%) of the financial sector in Mpumalanga, 1997-2010



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
South Africa	4.8%	2.3%	5.3%	3.3%	8.2%	6.4%	4.8%	7.1%	5.7%	9.6%	7.9%	7.3%	0.9%	1.9%
Mpumalanga	5.2%	4.7%	5.3%	-6.1%	5.1%	1.4%	5.0%	8.6%	7.7%	9.2%	7.3%	5.6%	0.1%	1.3%

Source of data: Author's own calculations based on Global Insight - ReX, Jan 2012

Figure 3.23 shows the average annual growth of the financial and business sector in Mpumalanga from the years 1997 to 2010. This graph showed more fluctuations than the transport graph (See Figure 3.22). In 1997 Mpumalanga had a growth rate of 5.2% and ended with a low growth rate of 1.3% in 2010. The financial and business sector experienced an ultimate low in 2000 with a declining growth rate of minus 6.1%. Afterwards, the sector experienced growth, although not high, but favourable. The highest peak of this sector was 9.2% in 2006.

The subsequent sector will give an overview of the infrastructure in the Mpumalanga Province.

3.5.2 Infrastructure in Mpumalanga

In his 2012 budget speech Mr Pravin Gordhan (2012:5) stated the main focus for South Africa is an expansion in infrastructure investment. The Maputo Development Corridor (MDC) and the Kruger Mpumalanga International Airport (KMIA) are two of the Mpumalanga Province's important infrastructures.

3.5.2.1 Maputo Development Corridor

The Maputo Development Corridor (MDC) is a Spatial Development Initiative from the South African government and links the Mpumalanga Province and the Gauteng province with the deep water port of Maputo in Mozambique. Easy access to export markets in Asia and the Indian Ocean Rim is provided to local and international investors (Jourdan, 1998:717). The MDC focuses attention on the Mpumalanga Province, creating investor confidence and growth in Nelspruit. This economic development corridor was seen as under-performing (Willoughby, 2007:5). Five key infrastructure anchor projects were initiated to enhance investment and development in the provinces along this corridor:

- The toll road from Witbank (in the Mpumalanga Province) to Maputo (in Mozambique).
- The upgrading of the railway line from Ressano Garcia to Maputo.

- The upgrading of the port of Maputo.
- The upgrading of the border post between South Africa and Mozambique.
- The upgrading of the telecommunication linkages between South Africa and Maputo.

3.5.2.2 Kruger Mpumalanga International Airport

In November 2002 the Kruger Mpumalanga International Airport (KMIA) was opened. The airport is situated 22km north of Nelspruit and has a runway of 3.2 km. This airport was designed to handle large cargoes and passengers and is currently handling international charter flights. In 2009 acting Premier Thabang Makwetla announced in his State of the Province address that negotiations surrounding government ownership of KMIA has been concluded. A feasibility study conducted in 2007 shows that KMIA has the economic development potential if KMIA includes the development of an industrial park. This park will be increased from 19ha in 2010 to 73ha in 2025 and will consist of the following related industries (Mpumalanga Department of Economic Development and Planning, 2009):

- Food, beverages and tobacco.
- Wood and paper, as well as publishing and printing.
- Textiles clothing and leather goods.
- Furniture and other manufacturing.
- Petroleum products, chemicals, rubber and plastic.
- Other non-metal mineral products.
- Metals, metal products, machinery and equipment.
- Radio, TV, instruments, watches and clocks.
- Electrical machinery and apparatus.
- Transport equipment and food processing.

From all the above information it can be gathered that the Mpumalanga Province is becoming an important province in the South African economy. All off the economic sectors have experienced growth, even with some negative growth rates. All of the sectors are growing and sustainable. Most of the investment projects in the Mpumalanga Province seem capable to provide its own resources and capital to fund

these projects. Mpumalanga also has a stable infrastructure, which enables easy access to the province.

3.6 SUMMARY AND CONCLUSION

This chapter provided an overview of socio-economic outlook and infrastructure of the Mpumalanga Province. This overview highlights that Mpumalanga is developing in the South African economy. The location of the Mpumalanga Province is one of the main benefits when one considers investing in this province.

An overview of the socio-economic structure of the province highlights that Mpumalanga has been experiencing a high population growth, poverty, and unemployment growth rates on the negative side. On the positive side the Mpumalanga Province has been experiencing a favourable growth in the economically active sectors and education.

The economic activity in the Mpumalanga Province shows a favourable GDP and GVA growth. The province experienced some declining growth rates with a trough of minus 1.6% in 2009, but increased to 2.5% in 2010. It was the same case with GVA growth; declining growth rates were experienced with a trough of minus 1.5% in 2009, but increased steadily to 1.9% in 2010. In the economic sectors the main contributors in 2010 were mining, electricity, agriculture and manufacturing. The trade sector also experienced a favourable growth. Mpumalanga's exports as a percentage of GDP, total trade as a percentage of GDP, and the regional share of exports and imports, experienced positive growth rates.

Agriculture is one of South Africa's main contributing sectors to the economy and is a key provider of employment in the country. In the Mpumalanga Province the agriculture sector provides employment to the largest number of people in the province. Over the time period 1997 to 2010, the sector experienced many fluctuations but ended with 18.3% in 2008 and decreased to 0.7% in 2010. The mining sector in the Mpumalanga sector is growing because of its abundance in mineral resources. This sector experienced favourable growth rates and ended with a growth rate of 5.6% in 2010. The energy sector of South Africa contributes about

15% of (GDP) and employs more than 16 thousand people in the Mpumalanga province (Mahlangu, 2009:16). This sector had a negative growth rate in 2008 (-3.2%).

The fastest growing sector is the construction sector in Mpumalanga and is important for the development of infrastructure. Proof of this is the positive growth rate of 10.5% in 2008 and the decline to 0.8% in 2010. The fourth biggest contributing sector to GDP was the transport sector. This sector experienced negative growth rates for most of the time period, ending with 0.6% in 2009 and increased steadily to 2.4% in 2010. Mpumalanga is known for its sophisticated commercial and financial business structure. The services sector in the country's economy has grown remarkable and is becoming a leading contributor to the GDP. The highest peak of this sector was 9.2% in 2006 but decreased to 1.3% in 2010.

Chapter 4 will provide an analysis of the estimation method of Revealed Comparative advantage (RCA) index of each product that Mpumalanga Province specialises in. The products will then be compared to the Realistic Export Opportunities (REOs) identified by the Decision Support Model (DSM).

CHAPTER 4: THE THEORETICAL FRAMEWORK OF THE REVEALED COMPARATIVE ADVANTAGE INDEX

4.1 INTRODUCTION

In this chapter the theory and practice behind the Revealed Comparative Advantage (RCA) will be discussed. The focus of this study is based on comparative advantage and how products with high RCA will enhance the Mpumalanga Province's exports; therefore, highlighting the RCA as the suited index for this study. The RCA equations along with its measurement will be explained. Subsequently the post office code description, harmonised system of codes and codes of the district office will be explained. Finally the chapter will be concluded with a description of the Decision Support Model (DSM) and the final compilation of the data.

Adam Smith and David Ricardo in theory justified and highlighted export importance with their theories of, respectively, absolute and comparative advantage theories. Ricardo (1817:8) uses an example of a large amount of goods that is exchanged for a product. In modern economics this is known as trading. Ricardo (1817:8) states that it is essential for a country to have commodities, but equally important is how these countries should use it. Through the utility embedded in a commodity, exchange value could derive from two sources: the shortage of the commodity and the amount of labour required to obtain it (Ricardo, 1817:8).

Developments from these theories by Smith and Ricardo helped to identify export industries that could be a benefit to a nation (Pearson, 2007:19-20). The Classical theory of comparative advantage, Ricardian, Heckscher-Ohlin-Samuelson theory and the Neo-factor-proportion theory are theories which put the understanding of comparative advantage more in perspective (Bender & Li 2002:1). Free trade, cost and technological differences, factor price differences and factor efficiencies are examples of how determinants of comparative advantage have differed amongst these four theories (Bender & Li, 2002:1). The diamond theory of Porter, based on national advantage, also provides a valuable and a simplified explanation on factors determining the competitiveness of export industries (Kleynhans, 2003:107). The

diamond theory is based on factor conditions, demand conditions, related and supporting industries, as well as firm strategy, structure and rivalry (Porter, 1998:16). Factor conditions involve the four production factors that are land, labour, capital and natural resources.

A country will experience comparative advantage and positive trade flows if all four production factors are located in the country (Porter, 1980:79). If a country possesses the necessary skills to predict future buyer needs or buyer demands in a specific product locally, the country will experience a comparative advantage in the demand condition factor (Porter, 1980:82). Industries that are competitive on international level provide comparative advantage to the related and supporting industry factors by providing advantages in cost effective inputs, research and development as well as the industries' location (Porter, 1998:17). Finally, a firm's strategy, structure and rivalry provide a comparative advantage for a country in the way the firm is created, organised and managed (Porter 1980:83). A country will benefit from comparative advantage if the diamond introduced by Porter is utilised correctly and efficiently.

Since 1994 South Africa worked hard to gain successful entry into international markets. South Africa gained accelerated exports, which supported a favourable economic growth rate (Pearson, 2007:6). Even though the growth rate has increased, there is still a need to establish comparative advantage for South African products. According to Sanidas and Shin (2010:5) comparative advantage is a determinant of the patterns of growth. Even though comparative advantage fuels economic growth, a complexity exists amongst the concept of empirical analysis and comparative advantage (Sanidas & Shin, 2010:5).

Taking the above into account, the Revealed Comparative Advantage (RCA) is the most suited index for this study. The accessible data from the South African Revenue Services (SARS) and the basic analysis and calculations of the RCA justifies the latter. The RCA index is constructed on post-trade variables, for example autarkic variables to indicate the patterns of comparative advantage (Sanidas & Shin, 2010:5). Measurement of comparative advantage is hindered by non-observable autarkic price relationships (Bender & Li, 2002:2). According to

Bender and Li (2002:2) post-trade data observes the true patterns of comparative advantage. The one disadvantage is however that government policy distortions cause data at different levels to be biased. Regardless of the above, Balassa's thesis highlighted the process where economies are shifted from one competitive position to another (Bender & Li, 2002:2). Balassa and Stoutjesdijk (1984:39) depicts that a competitive position consists of the following assumptions. An economy that provides industries with an incentive to export will ensure that foreign markets' sales are increased. Countries in close proximity to one another will enhance exports by means of regional integration and finally, preferential incentives such as rebates and discounts, will fuel exports in the specific country.

For the purpose of this study, the Revealed Comparative Advantage (RCA) approach will be used to determine Mpumalanga Province's potential exportable products. The next section will focus on the RCA index and its use.

4.2 DESCRIPTIVE EXPLANATION OF THE RCA INDEX

Bela Balassa is seen as the originator of the RCA index. According to Utkulu and Seymen (2004:8) the concept of RCA refers to the relative trade performances of individual countries in particular commodities and is based on the theory of Balassa. On the assumption that the commodity pattern of trade reflects a country's differences in relative costs, as well as in non-price factors, this is assumed to reveal the comparative advantage of trading countries (Balassa, 1977:327). The RCA definition has been modified to such an extent that multiple measures of the RCA now exists (Utkulu & Seymen 2004:8). Vollrath (1991:270-272) states that RCA are measured on global or sub-global levels, while Dimelis and Gatsios depict that the measurements reveal bilateral trade between two or more countries (Utkulu & Seymen, 2004:8).

The next section will provide a description of trade theory of the RCA, a clarification of the RCA equation and how the RCA is measured.

4.2.1 Trade theory

Liesner's (1958:314) design of relative export performance was developed through the application of Balassa's innovation on the measurement of comparative advantage. Liesner (1958:314) used the idea of relative export performance and adopted the ratio of export shares. From this, the index for comparative advantage was developed (Sanidas & Shin, 2010:12). The RCA is outlined by the identification of exports, specific countries and specific commodities. By identifying the advantages and disadvantages of a country that has a specific class of goods being traded, the RCA is calculated.

Batra and Khan (2005:5-6) list the advantage and disadvantage of a comparative advantage index. The benefit of this index is that the factor endowment and productivity of an economy is consistent with the intrinsic advantage of specific exportable products. Sanidas and Shin (2010:12) explain that comparative advantage of a country's commodities are measured when the export market size of the commodity in terms of export market size is bigger than the commodity's market size, in terms of world total export market size.

The disadvantage of the comparative advantage of a country can on the other hand be measured when the export market size of the commodity, in terms of export market size, is smaller than the commodities market size, in terms of world total export market size (Sanidas & Shin, 2010:12). When the commodities market in a certain country is as large as the world export market, this is viewed as the comparative advantage focus point.

The disadvantage of this index is that it is complicated to determine, when changes need to be made to factor endowments in order to apply suitable trade policies to a country (Batra & Khan, 2005:5-6). Bowen (1983:465) states that world exports of a specific product are dispersed amongst different countries if it is proportional to the world export share. A comparison can then be made towards a specific country's sector export performance.

The next section will describe the RCA equation and how it is calculated to provide a better understanding of its use.

4.2.2 The RCA equation

The empirical research methodology of this study will be developed subsequently. Batra and Khan (2005:5) used Balassa's theory of Revealed Comparative Advantage (RCA) where relative export performance of the country and the specific commodity are measured by relative export performance (Kleynhans, 1998:498). The index, formulated by Balassa, is structured as:

$$B = (xij / xit) / (xnj / xnt) \qquad \text{Eq. 1}$$

Where,

- B = Trade patterns
- x = Exports
- i = Country
- j = Commodity
- t = set of commodities
- n = set of countries

Comparative advantage will then be exposed when the value of this trade pattern exceeds one (B>1) (Balassa, 1979:259-260; Cuyvers, Naudé, Pearson & Viviers, 2010:6; Steenkamp *et al*., 2009:14).

Krugell and Matthee (2009:461) state that trade between multiple countries will find it beneficial if commodities are produced and exported in countries where comparative advantage is high. A country's comparative advantage can therefore be calculated, using trade patterns (Krugell & Matthee, 2009:461).

Applying Balassa's methodology, the equation is converted to measure the Mpumalanga's Province exports in South Africa in this study.

$$RCA = \left(\frac{X_{MP\,j}}{X_{SA\,j}} \right) \Big/ \left(\frac{X_{MP,tot}}{X_{SA,tot}} \right) \qquad \text{Eq. 2}$$

Where,

RCA = Revealed Comparative Advantage
X_{MPj} = Mpumalanga's export of the specific product
$X_{MP,tot}$ = Mpumalanga's total exports
$X_{SA}j$ = South Africa's export of a specific product
$X_{SA,tot}$ = South Africa's total exports

This implies that the RCA index relates the relative share of the country's production of a particular product or industry to the province's exports; relative to the share of total export that the province exports in total.

This adapted measure of Balassa's RCA index will be used to calculate the empirical data in Chapter 5 to determine the export potential of sectors and industries in the Mpumalanga Province. In the following section it will be explained how the results will be interpreted.

4.2.3 Measurement of the RCA

If the estimated RCA is larger than one, it will indicate that Mpumalanga is relatively specialised in a specific product. This then implies that Mpumalanga will have a revealed comparative advantage in that specific product (Batra & Khan, 2005:5). In contrast, Mpumalanga will have a comparative disadvantage when the RCA is smaller than one (Faustino, 2008:7).

The subsequent part of this study will provide an overview and analysis regarding the data that will be used in the empirical analysis of this study.

4.3 DATA DESCRIPTION

Data obtained from the South African Revenue Service (SARS) was used for the purpose of this study. This export data from SARS was processed by using the post office codes of each province. Along with the SARS data, the export data was sorted under the Harmonized System Tariff Codes, Tariff code description, as well as District offices and Custom values of the United Nations.

4.3.1 Post office code description

In the database used, each post office code has specific export data linked to it. Representing the area is a four digit code, ranging between 0001 and 9999. The ranges are divided into post-box and street codes and the codes correspond to place names, sorting centres and provinces. Table 4.1 outlines the post office code system of South Africa. Since the data available from SARS is sorted along the post office codes system, a wide variety of data is available. A disadvantage of this data is that the South African provincial boundaries and the post office distribution areas do not always match perfectly (Lombaard, 2005:1).

The following section will explain the harmonised system of codes and tariff headings to provide a clearer understanding of how it works and is used.

4.3.2 The harmonised system codes – tariff headings

The Harmonised System of Codes (HS Codes) is an international standard classification for the categorisation and description of the coding of goods of the world (Yu, 2008:1). HS codes were introduced on 1 January 1988 by the World Customs Organization (WCO) and are reviewed or amended every four to six years to take into account new product innovations that are introduced into the market each year (Pierce & Schott, 2010:3; Yu, 2008:1). The Harmonised System is divided into 97 “chapters” and 21 “sections”. These “chapters” and “sections” are described in the following paragraphs.

4.3.2.1 Section and Chapter Headings

The 21 Sections of the HS codes provide an explanation of the 97 Chapter headings which is outlined in Table 4.2. The harmonised system of codes ranges from live stock and animal products in section 1, to chemical products in section 6 (Chapter 28-38), plastic and rubber products in section 7 (Chapter 39-40), textiles in section 11 (Chapter 50-63), metal objects in section 15 (Chapter 72-83), vehicles and aircraft in section 17 (chapter 86-89) and arms and ammunition in section 19 (Chapter ‘93), to name a few.

Table 4.1: Post Office Outline

Province	City - Hub	Range	
		Start	End
Gauteng	Pretoria 1	1	204
Mpumalanga	Pretoria 2	205	698
Limpopo	Polokwane (Pietersburg)	699	999
Mpumalanga	Pretoria 3	1000	1199
	Nelspruit	1200	1399
Gauteng	Germiston	1400	1699
	Heidelberg	1438	1444
	Krugersdorp	1700	1799
	KDP/Soweto	1800	1870
	Vanderbijlpark	1871	1990
	Witspos (Johannesburg)	2000	2199
Mpumalanga	Pretoria 4	2200	2494
North West	Krugersdorp	2495	2519
	Potchefstroom	2520	2709
	Mafikeng	2710	2899
KwaZulu-Natal	Ladysmith	2900	3199
	Pietermaritzburg	3200	3599
	Ladysmith	3310	3599
	Durmail 2	3600	3799
	Richards Bay	3800	3990
	Durmail 1	3991	4179
	Port Shepstone	4180	4299
	Durmail 2	4300	4641
	Port Shepstone	4642	4730
Eastern Cape	Umtata	4800	4899
	East London	4920	5049
	Umtata	5050	5199
	East London	5200	5750
	Port Elizabeth	5751	6499
Western Cape	George	6500	6699
	Worchester	6700	6899
	Beaufort West	6900	7099
	Cape Mail	7100	8179
Northern Cape	Upington	8180	8299
	Kimberley	8300	8799
	Upington	8800	8999
Free State	Bloemfontein 1	9300	9409
	Welkom	9410	9699
	Bloemfontein 2	9700	9999

Source: Adapted from Lombaard (2005, p1-2)

Table 4.2: HS Code outline

Section	Chapter	Description
1	1-5	Live animals, animal products
2	6-14	Vegetable products
3	15	Animal or vegetable fats and oils and their cleavage
4	16-24	Prepared foodstuffs, beverages, spirits and vinegar
5	25-27	Mineral products
6	28-38	Products of the chemical or allied industries
7	39-40	Plastics and articles thereof, rubber and articles thereof
8	41-43	Raw hides and skins, leather, fur skins and articles thereof, saddles and harness, travel goods, handbags and similar containers, articles of animal guts (other than silk worm gut)
9	44-46	Wood and articles of wood, wood charcoal, cork and articles of cork, manufactures of straw, of esparto or of other plaiting materials, bask ware and wickerwork
10	47-49	Pulp of wood or of other fibrous cellulosic material, recovered (waste and scrap) paper or paperboard, paper and paperboard and articles thereof
11	50-63	Textiles and textile articles
12	64-67	Footwear, headgear, umbrellas, sun umbrellas, walking-sticks, seat-sticks, whips, riding-crops and parts thereof, prepared feathers and articles made therewith, artificial flowers, articles of human hair
13	68-70	Articles of stone, plaster, cement, asbestos, mica or similar materials, ceramic products, glass and glassware
14	71	Natural or cultured pearls, precious or semi-precious stones , precious metals, metals clad with precious metal and articles thereof, imitation jewellery, coin
15	72-83	Base metals and articles of base metal
16	84-85	Machinery and mechanical appliances, electrical equipment, parts thereof, sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles
17	86-89	Vehicles, aircraft, vessels and associated transport equipment
18	90-92	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus, clocks and watches, musical instruments, parts and accessories thereof
19	93	Arms and ammunition, parts and accessories thereof
20	94-96	Miscellaneous manufactured articles
21	97	Works of art, collectors' pieces and antiques

Source of data: Adapted from International Trade Centre (ITC) Trademap, 2012

The chapter and section outline provided in table 4.2 is standard for all countries involved in international trade. The section below will provide clarity on how the heading and subheading is divided amongst HS Codes.

4.3.2.2 Headings and Subheadings

The heading and subheading of the HS codes provide a theoretical description of the specific code. Table 4.3 provides an example of the "Heading and Sub-heading".

Table 4.3: Heading and Subheading outline

Chapter	Heading (four digit)	Extended / Undivided Sub-heading (six digit)	Description
01			Live animals, animal products
	0101		Live horses, asses, mules and hinnies
		0101.10	Pure-bred breeding animals
		0101.90	Other

Source of data: Adapted from ITC Trademap, 2012

According to Table 4.3 pure-bred breeding animals belong under chapter 01, below heading 0101. The extended or undivided sub-heading code for pure-bred breeding animals will be 0101.10. An additional two digits will be added on national level for the purpose of tariff duties and more specific trade statistics, and should only be used on a national level, for example, for South African products (Yu, 2008:2-3).

The subsequent section will provide a description of the district office codes and will provide the district office codes of the Mpumalanga Province.

4.3.3 District office codes

The SARS export data that was used in the empirical investigation of this study is also divided into district office codes, along Post Box codes and HS codes. Table 4.4 provides South Africa's District office codes and Table 4.5 the district office codes for the Mpumalanga Province. The district office code for Johannesburg is, for example, "JHB", and the code for Lebombo is "KOM".

Table 4.4: District office codes in South Africa

District Office	
Code	**Name**
BBR	Beit Bridge
BFN	Bloemfontein
CLP	Caledonspoort
CTN	Cape Town
DFM	Cape Town International Airport
DBN	Durban
LBA	Durban International Airport
ELN	East London
FBB	Ficksburg Bridge
GMR	Germiston
GOL	Golela
GRB	Groblers Bridge
JPR	Jeppes Reef
JHB	Johannesburg
JSA	O.R. Tambo International Airport
KBY	Kimberley
KFN	Kopfontein
KOM	Lebombo
MAH	Mahamba
MAN	Mananga
MSB	Maseru Bridge
MAF	Mmabatho
MOS	Mossel Bay

District Office	
Code	**Name**
NAR	Nakop (Narogas)
NRS	Nerston
PSH	Oshoek
OUD	Oudtshoorn
PRL	Paarl
PMB	Pietermaritzburg
PEZ	Port Elizabeth
HFV	Port Elizabeth Airport
PTA	Pretoria
QAC	Qacha's Nek
RAM	Ramatlabama
RIC	Richards Bay
RBS	Robertson
SKH	Skilpadshek
STE	Stellenbosch
UPT	Upington
UPS	Upington Station
UIA	Upington International Airport
VRH	Van Rooyenhek
VLD	Vioolsdrift
VRE	Vredendal
WOR	Worcester

Source of data: Excerpt from SARS, 2010

Table 4.5: District office codes of the Mpumalanga Province

Mpumalanga	
Code	**Name**
JPR	Jeppes Reef
KOM	Lebombo
MAH	Mahamba
MAN	Mananga
NRS	Nerston
PSH	Oshoek

Source of data: Excerpt from SARS, 2010

Taking section 4.3.1 to 4.3.4 of this study under examination, the SARS export data compiled by the Revenue Services, was filtered to focus on a specific province, which is Mpumalanga in this case. The products identified through the filters will then

be compared to the Decision Support Model (DSM) of the Export Promotion Agency of the South African Department of Trade and Industry. The subsequent section will explain this DSM (see also paragraph 2.1.3).

4.3.4 The Final Compilation of the Data

Subsequent to the SARS export data being filtered, the tariff headings along with its custom value will be divided into the HS chapter headings to which they belong. The customs value represents the value of all the proceeds received from goods exported internationally. The export products will then be sorted from the largest to the smallest values in each subsector of industries. The largest ten export values of the products of each "chapter" will be used to calculate the RCA indices. Table 4.6 gives an example of how the reworked SARS data will look like. The tariff heading for live horses is 010190 with a custom value of R96 700. Bovine animals will have a tariff heading of 010210 and a custom value of R1.1 million.

Table 4.6: Compiled data

Tariff	Tariff Heading & Description	Customs value
010190	010190 - Live horses/asses/mules/hinnies other than pure-bred breeding animals	96700
010210	010210 - Bovine animals, live pure-bred breeding	1161280

Source of data: Adapted from ITC Trademap, 2012

Finally, the compiled data will be examined to establish the RCA of exportable products of the Mpumalanga Province. The SARS data indicates the post office codes, and tariff headings along with the customs value of each tariff and the district office codes. After the data is filtered, exportable products for the Mpumalanga Province will be identified. Matching these products to the DSM export opportunities will provide this study with viable exportable products to effectively enhance the Mpumalanga Province's export activity.

4.3.5 Decision Support Model (DSM)

A Decision Support Model (DSM) was developed and applied to the Belgium economy by Cuyvers *et al* (1995:173). This model was adopted and improved scientifically for South African circumstances by the North-West University (South

Africa) in collaboration with Dr. Pearson, Prof Cuyvers and the Department of Trade and Industry (DTI). The DSM is used for the planning and assessment of export promotion activities. Governments frequently have limited resources to allocate between export promotional instruments and different export activities. The DSM is a useful instrument in this regard (Cuyvers *et al.,* 1995:173). From an export promotion point of view, the DSM presents the Department of Trade and Industry with a powerful tool to identify realistic export opportunities for South African products so that South Africa has an international competitive advantage (Pearson, 2007:37-38).

The DSM also helps to prioritize export assistance to potentially successful exporters in South Africa (Pearson, 2007:37-38). In order to address this problem, the DSM was applied to the South African economy in identifying products with high export potential (Pearson, J.J.A., Cuyvers, L. & Viviers, W., 2006:3). This instrument assists exporters in South Africa in various ways. Exporters now have the ability to access foreign business opportunities that will lead to realistic sustainable export markets for their products and which will increase a firm's export profitability and export volumes (Pearson, 2007:37-38). The DSM is therefore used to help governments to optimally assign their scarce resources to markets, which have the highest export potential (Cuyvers *et al.,* 1995:174).

The DSM works through a process of four filters and each filter is used for a certain task (Cuyvers, 2004:256). The first filter includes all the countries of the world as potential target markets. This filter gathers information regarding the political and commercial risk of doing business with countries and determines which markets have sufficient general export potential.

The market potential of all the products of the countries that came through the first filter are then assessed in the second filter and this is done by product-related criteria of market potential. Filter three involves an in-depth study into the remaining potential export opportunities and markets that are too complicated to access - due to entry barriers – and are then eliminated. Finally, the fourth filter determines the most practical export opportunities. This is done by parameters that assess the strengths and weaknesses of the exporting country in the specific market.

The practical export opportunities identified by the DSM will then be compared to the RCA estimations. The RCA calculation will be used to identify exportable products with comparative advantage in the Mpumalanga Province.

4.4 SUMMARY AND CONCLUSION

This chapter provided an overview and analysis of the Revealed Comparative Advantage (RCA) Index and the data from the South African Revenue Service that will be used for the empirical analysis of this study. This chapter also provided insight into the Decision Support Model (DSM) that will be utilised.

South Africa has gained successful entry into international markets and had accelerated exports, which led to a favourable economic growth rate. Even when the accelerated export and growth rate are improving, a country's comparative advantage needs to be determined and developed. For the purpose of this study, the most suited index chosen was RCA, where advantage in a specific commodity in a country is identified. If the RCA is larger than one, it indicates that the Mpumalanga Province will be relatively specialised in the specific product, superior to others, implying that Mpumalanga has a revealed comparative advantage in the specific product, but a comparative disadvantage when the RCA is smaller than one.

Export data from the South African Revenue Service (SARS) was used. The SARS data provides post office codes and tariff headings, along with the customs value of each tariff and district office codes. After filtering the data, exportable products for the Mpumalanga Province will be indentified. The products identified will then be compared to the DSM exportable products to determine exportable opportunities that may effectively enhance the Mpumalanga Province's export activities.

The DSM is used for the planning and assessment of export promotion activities and works through a process of four filters and each filter is used for a specific task. Through a process of elimination, practical export opportunities are identified by the DSM and then compared to the SARS export data. The RCA calculation will then be used to identify exportable products with comparative advantage in the Mpumalanga Province.

The subsequent chapter will conduct an empirical investigation and examine the RCA results to identify export products that will effectively enhance Mpumalanga's trade and export promotion.

CHAPTER 5: RESULTS OF THE REVEALED COMPARATIVE ADVANTAGE (RCA) FOR THE MPUMALANGA PROVINCE

5.1 INTRODUCTION

It is the aim of this study to determine potential exportable products for the Mpumalanga Province. Following the Revealed Comparative Advantage (RCA) and the Decision Support Model (DSM) that was explained in Chapter 4, a Revealed Comparative Advantage index was compiled for the Mpumalanga Province in South Africa, with data compiled from the South African Revenue Service (SARS). Together with the identified exportable products from the DSM, a structured index was compiled to determine the exportable products for the Mpumalanga Province and the results of this analysis are reported in this study.

This study only focuses on one of the nine provinces in South Africa; therefore, only the Mpumalanga Province was used to construct the index. Using the SARS data on postal code level, 2671 different products at tariff heading level, from a total of the 5402 different products from the DSM, were identified. The gathered products on tariff heading value, together with their custom value, were then categorised underneath the Harmonised Standard (HS) code divisions, known as “chapters”.

Table 5.1 provides the chapter sections of the harmonised standard and overall heading of the products in each chapter. The product in each chapter division was then used to estimate the RCA of the specific product. As explained in Chapter 4, the purpose for these calculations is to determine which products in Mpumalanga have an RCA value bigger than one. This will indicate that the Mpumalanga Province will be relatively specialised in the specific product, which implies that Mpumalanga has a revealed comparative advantage in that specific product, but a comparative disadvantage when the RCA is smaller than one.

The subsequent part of this study will provide the Mpumalanga Province’s ten industries in which this province has the highest competitive advantage, as well as those industries with the lowest competitive advantage.

Table 5.1: Harmonised standard code chapter division

Chapter	Description
01 – 05	Animals and animal products
06 – 15	Vegetable products
16 – 24	Foodstuffs
25 – 27	Mineral products
28 – 38	Chemicals and allied industries
39 – 40	Plastic and rubber products
41 – 43	Raw hides, skins, leather, fur products and hunting
44 – 49	Wood and wood products
50 – 63	Textiles
64 – 67	Footwear and headgear products
68 – 71	Stone and glass items
72 – 83	Metals
84 – 85	Electrical Machinery
86 – 89	Transportation
90 – 97	Miscellaneous

Source: Author's own compilation

The DSM provides potential exportable products in South Africa, which have a competitive advantage and for which opportunities exists in foreign markets. These products will be matched to the RCA results of the Mpumalanga Province to determine which products have a high competitive advantage in the province.

5.2 THE MOST COMPETITIVE PRODUCTS AND THE LEAST COMPETITIVE PRODUCTS OF THE MPUMALANGA PROVINCE

The ten industries with the highest and lowest competitive advantage in the Mpumalanga Province were determined by each product's custom value, sorted from the highest to the lowest value. The customs value[2] of each product is determined by the value of products exported from South Africa. The revealed comparative advantage of each tariff heading is determined by using the RCA calculation equation given in Chapter 4 of this study.

[2] Customs value refers to the rand value of a specific product per year.

$$RCA = \left(\frac{X_{MP\,j}}{X_{SA\,j}} \right) \Big/ \left(\frac{X_{MP,\,tot}}{X_{SA,\,tot}} \right)$$

Eq. 1

Where,

X_{MPj} = Mpumalanga's export of the specific product

$X_{MP,tot}$ = Mpumalanga's total exports

$X_{SA}j$ = South Africa's export of the specific product

$X_{SA,tot}$ = South Africa's total exports

Following the above calculation of the RCA, a value is obtained to determine whether the product has comparative advantage.

Table 5.2: The Mpumalanga Province's ten largest competitive products

Highest competitive advantage Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
811100	Manganese, articles thereof, waste or scrap	R567 million	R570 million	72.31
210410	Soups and broths and preparations thereof	R105 million	R219 million	35.05
170199	Refined sugar, in solid form, pure sucrose	R302 million	R916 million	23.98
260300	Copper ores and concentrates	R845 million	R4, 7 billion	12.93
721913	Hot rolled stainless steel coil, w >600mm, t 3-4.75mm	R127 million	R803 million	11.49
261000	Chromium ores and concentrates	R1,1 billion	R8,3 billion	9.60
170111	Raw sugar, cane	R105 million	R888 million	8.66
100590	Maize, except seed corn	R112 million	R2 billion	3.92
080510	Oranges, fresh or dried	R120 million	R4,4 billion	1.98
720241	Ferro-chromium, >4% carbon	R549 million	R24,4 billion	1.64

Source: Author's own calculations

A product with high comparative advantage will give the Mpumalanga Province an incentive to effectively enhance the export of the specific product; therefore, causing a triple bottom effect, increased economic growth, economic activity and export growth within the province.

Table 5.2 provides the Mpumalanga Province's ten highest exported products, sorted according to its RCA index. Using the RCA formula, the RCA value is calculated by firstly dividing the South African total export of specific products by Mpumalanga's export of specific products.

For example:

The metal industry in South Africa exports R570 million manganese products to other countries annually (2010), of which R567 million is exported from the Mpumalanga Province. In total South Africa exported R502 billion (2010) worth of exportable products, while R6.9 billion is exported from the Mpumalanga Province.

$$RCA = \left(\frac{X_{MP\,j}}{X_{SA\,j}} \right) \Big/ \left(\frac{X_{MP,tot}}{X_{SA,tot}} \right)$$

$$RCA = \left(\frac{567685407}{570330034} \right) \Big/ \left(\frac{6920315363}{502718091573} \right)$$

$$RCA = 72.31$$

and 72.31 > 1

This value is larger than one, indicating that the Mpumalanga Province has a competitive advantage in this product, implying that Mpumalanga Province should export this product to the international market.

The RCA values for Table 5.2 are ranked from large to small, for the products of the Mpumalanga Province. Soups has a RCA of 35.05, whereas chromium's RCA value is only 9.6. It is remarkable that the products with the largest export volume or export value are not those in which the region has the highest comparative advantage. This is probably an indication of under-utilised export opportunities in the province.

Chromium (R1.1 billion), copper (R845 million) and manganese articles (R567 million) are the top three exported products in Mpumalanga. One of the products in Table 5.2 that draws attention is raw sugar, as this is a typical product that is normally planted in subtropical areas such as the KwaZulu-Natal Province.

In line with the ten largest exporting sectors in the Mpumalanga Province the most competitive sectors are manganese products with an RCA of 72.31, followed by soups (35.05) and refined sugar (23.98). Ferro-chromium were only in tenth place, although the province exports ferro-chromium in excess of R549 million.

Table 5.3 provides the ten least export products in the Mpumalanga Province, which has no significance in the export sector in this province.

Table 5.3: The Mpumalanga Province's ten least competitive products

Least competitive products Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
440725	Lumber, Meranti Red (dark)	0	R109 thousand	0.00
732611	Balls, iron/steel, forged/stamped for grinding mills	5	R312 million	0.00
410210	Sheep or lamb skins, raw, wool on, except Persian	28	R191 million	0.00
283110	Dithionites and sulphoxylates of sodium	43	R4,2 million	0.00
252810	Natural sodium borates and concentrates	40	R2,2 million	0.00
120921	Seed, lucerne (alfalfa), for sowing	20	R824 thousand	0.00
910229	Wrist-watch, base-metal case, hand wound	34	R1,3 million	0.00
251010	Natural calcium phosphates, unground	15	R263 thousand	0.00
293719	Polypeptide hormones, protein hormones & glycoprotein hormones, their derivatives	38	R524 thousand	0.01
230650	Coconut or copra oil-cake and other solid residues	2	R214	0.68

Source: Author's own calculations

Table 5.3 depicts that lumber is the least exported product with a customs value of 0, even though the South African total exports of lumber is R109 thousand, but other lumber products with a high RCA value is depicted in table 5.11. The RCA was calculated to a value of 0, which depicts that this product has a comparative disadvantage in the Mpumalanga Province.

Other comparative disadvantaged products in the Mpumalanga Province include coconuts, iron steel balls, calcium phosphates, lucerne seeds, sheep and lamb skins, wrist watches, polypeptide hormones, natural sodium borates, and dithionite and sulphoxylates of sodium. The RCA for all of these products are about zero, concluding that these products are at a comparative disadvantage for the

Mpumalanga Province and will have no significant impact on the export activity of the products or the province.

The subsequent section will focus on the top ten products in the Mpumalanga Province that are categorised under the Harmonised Standard code chapter division in Table 5.1.

5.3 ANALYSIS OF THE RCA IN THE MPUMALANGA PROVINCE ACCORDING TO SECTORS

The following section discusses each chapter categorised by the harmonised standard code system. The top ten products with regards to their high RCA values in the Mpumalanga Province are discussed under each chapter along with the specific product's RCA value.

5.3.1 Animals and animal products

This section considers all animals and animal products ranging from live animals to products such as milk powder.

Table 5.4 shows that salted bovine meat with an RCA of 61.10 and an export customs value of R8 million, is the highest export product in the Mpumalanga Province when considering its competitive advantage (RCA). The second highest product is frozen fish with an RCA of 53.43 and an export customs value of R12 million, followed by bovine cuts (beef) with an RCA of 22.39 and a customs value of R11 million. The rest of the top ten products consist out of non-concentrated milk with an RCA of 19.39, yogurt (17.30), cheese (13.26), fowls (8.75), bird eggs (8), milk powder (4.6) and frozen fish (1.68). The three highest exportable products in terms of customs value are milk powder (R25 million), non-concentrated milk (R20 million) and bird eggs (R12 million).

Mackerel is one of the products that draw attention in Table 5.4, as the Mpumalanga Province is not known for its vast variety of rivers and dams, but rather for its dry landscapes and bushveld, except for trout fishing. The high volumes of Mackerel could also be as a result of re-export. Maybe "Mackerel" should be read as "fish", but

the province is not known for producing large numbers of trout and other freshwater fish either.

Table 5.4: The Mpumalanga Province's ten largest competitive products in the animals and animal product chapter

Animals & animal products Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
021020	Bovine meat salted, dried or smoked	R8 million	R9,6 million	61.10
030374	Mackerel, frozen, whole	R12 million	R16,3 million	53.43
020120	Bovine cuts bone in, fresh or chilled	R11,1 million	R36 million	22.39
040120	Milk not concentrated nor sweetened 1-6% fat	R20,2 million	R75,6 million	19.39
040310	Yogurt	R10,5 million	R44,2 million	17.30
040690	Cheese except fresh, grated, processed or blue-veined	R8,1 million	R44,3 million	13.26
020714	Fowls, cuts & offal, frozen	R9,7 million	R80,8 million	8.75
040700	Bird eggs, in shell, fresh, preserved or cooked	R12,4 million	R113,2 million	8.00
040210	Milk powder < 1.5% fat	R25,5 million	R403,1 million	4.60
030379	Fish, frozen, whole	R8 million	R345,3 million	1.68

Source: Author's own calculations

5.3.2 Vegetable products

This section includes all vegetables and fruits, as well as a variety of crops with nutritional value to households in the Mpumalanga Province. Products such as tea, nuts and other products, which fall under the vegetable category, are listed in this chapter.

Table 5.5 shows that tomatoes with an RCA value of 60.20 and an export customs value of R8.7 million is the highest exported product in the Mpumalanga Province when considering its comparative advantage (RCA). The second highest product is maize flour with an RCA of 12.98 and exporting products totalling a customs value of R120 million. It is followed by pearled maize with an RCA of 12.84 and a customs value of R7.9 million.

Table 5.5: The Mpumalanga Province's ten largest competitive products in the vegetable product chapter

Vegetable products Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
070200	Tomatoes, fresh or chilled	R8,7 million	R10,4 million	60.20
110220	Maize (corn) flour	R12 million	R67,5 million	12.98
110423	Maize (corn), hulled, pearled, sliced or kibbled	R7,9 million	R44,7 million	12.84
090240	Tea, black (fermented or partly) in packages > 3 kg	R28,6 million	R223,5 million	9.30
120991	Seed, vegetable, for sowing	R7,9 million	R129,3 million	4.48
100590	Maize, except seed corn	R112,8 million	R2 billion	3.92
080540	Grapefruit, fresh or dried	R36,2 million	R723,6 million	3.64
110313	Maize (corn) groats or meal	R12,6 million	R278,9 million	3.30
080290	Nuts, edible, fresh or dried	R7,9 million	R215,4 million	2.68
080510	Oranges, fresh or dried	R120,1 million	R4,4 billion	1.98

Source: Author's own calculations

The rest of the top ten products are tea with an RCA of 9.09, vegetable seeds (4.48), all maize products (3.92), grapefruit (3.64), maize groat (3.30), edible nuts (2.68) and oranges (1.98). The three highest exportable products in terms of customs value are oranges (R120 million), maize corn (R112 million) and grapefruit (R36 million).

Even though oranges have a customs value of R120 million, it only has an RCA of 1.98, the lowest figure in Table 5.5. The low RCA depicts that oranges is not a product that Mpumalanga has a high comparative advantage in, with plenty of opportunities to export.

5.3.3 Foodstuff

The foodstuff HS chapter includes all the edible products that are not available in the animal and vegetable product sector. All reworked (processed) products from the raw ingredients obtained in the animal and vegetable sector, are included in this HS chapter.

Table 5.6: The Mpumalanga Province's ten largest competitive products in the foodstuff chapter

Food products Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
200830	Citrus fruits, otherwise prepared or preserved	R20,8 million	R28,2 million	53.50
170410	Chewing gum containing sugar, except medicinal	R19,2 million	R38,7 million	36.00
210410	Soups and broths and preparations thereof	R105,8 million	R219,3 million	35.05
230400	Soybean, oil-cake and other solid residues	R21,4 million	R63,3 million	24.60
170199	Refined sugar, in solid form, pure sucrose	R302,6 million	R916,7 million	23.98
180690	Chocolate/cocoa food preparations	R23,5 million	R143,7 million	11.90
200980	Single fruit, vegetable juice, not fermented or spirited	R28,9 million	R194,4 million	10.82
200990	Mixtures of juices not fermented or spirited	R38,4 million	R280,9 million	9.94
170111	Raw sugar, cane	R105,9 million	R888,4 million	8.66
210690	Food preparations	R30,8 million	R817,2 million	2.74

Source: Author's own calculations

Table 5.6 depicts that citrus fruits that are otherwise prepared or preserved, is the highest exportable product in the Mpumalanga Province with an RCA of 53.50 and an export customs value of R20 million. The second highest product is chewing gum with an RCA of 36 and an export customs value of R19 million, followed by soups with an RCA of 35.05 and a customs value of R105 million. The rest of the top ten products consist of soybean with an RCA of 24.60, refined sugar (4.48), chocolate and cocoa food preparations (11.90), vegetable juice (10.82), mixtures of juices (9.94), raw sugar cane (8.66) and food preparations (2.74). The three highest exported products in terms of customs value are refined sugars (R302 million), raw sugar cane (R105 million) and soups (R105 million).

An interesting product that draws attention in Table 5.6 is sugar. Sugar is more commonly known to be produced in the KwaZulu-Natal Province, known for its sugar cane plantations. Nonetheless, in the Lowveld of Mpumalanga there is also large sugar cane plantations and sugar processing.

Table 5.6 depicts that sugar is produced in the Mpumalanga Province on a large scale. Chewing gum is also an attention-grabbing product on the top ten lists as this is not usually considered to be an exportable product, but it has an RCA of 62, showing that it is a highly exportable product in the province.

5.3.4 Mineral products

This HS chapter focuses on one of the most important sectors in the South African economy: the mineral industry - as South Africa consists of various minerals - and its subsequent mining activities. Mineral products include all minerals from chromium, copper and petroleum, but excluding chemical products.

Table 5.7 depicts that petroleum is the highest exportable product in the Mpumalanga Province with an RCA of 13.57 and an export customs value of R41 million is already exported. The second highest product is copper ores with an RCA of 12.93 and an export customs value of R845 million, followed by bituminous mix with an RCA of 10.28 and a customs value of R5.3 million.

Table 5.7: The Mpumalanga Province's ten largest competitive products in the mineral product chapter

Mineral products Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
271320	Petroleum bitumen	R41,2 million	R220 million	13.57
260300	Copper ores and concentrates	R845,2 million	R4,7 billion	12.93
271500	Bituminous mix, mastic from asphalt, bitumen/tar/pitch	R5,3 million	R37,5 million	10.28
261000	Chromium ores and concentrates	R1,1 billion	R8,3 billion	9.60
252329	Portland cement, other than white cement	R20,5 million	R203,4 million	7.33
270120	Coal briquettes, ovoids, similar made solid fuels	R13,8 million	R245,7 million	4.11
270119	Coal except anthracite or bituminous, not agglomerate	R21 million	R1,1 billion	1.30
271019	Light petroleum distillates	R3 million	R585,7 million	0.38
271011	Aviation spirit	R17,9 million	R9,6 billion	0.14
270112	Bituminous coal, not agglomerated	R65,3 million	R38,2 billion	0.12

Source: Author's own calculations

The rest of the top ten products consist of chromium ores with an RCA of 9.60, Portland cement (7.33), coal briquettes (4.11), coal (1.30), light petroleum distillates (0.38), aviation spirit (0.14) and bituminous coal (0.12). The three highest exportable products in terms of customs value are chromium ores (R1.1 billion), copper ores (R845 million) and bituminous coal (R65 million).

Two discussion points in Table 5.7 are petroleum bitumen and aviation spirit. These two products both have an RCA below 1, showing that these two products are seen as comparative disadvantaged in the Mpumalanga Province. Petroleum bitumen and aviation spirit are only listed amongst the ten highest export products with comparative advantage, because of their high export values. Petroleum bitumen has a custom value of R41 million and aviation spirit has a value of R17 million. The RCA value of petroleum bitumen is 13.57, while aviation spirit is only 0.14. There is also a large difference in the RCA of petroleum bitumen (13.57) and light petroleum distillates (0.38).

The mineral sector in the Mpumalanga Province is the drive behind economy activity in the province due the amount of copper mined and industries that are situated in the province.

5.3.5 Chemicals and allied industries

The chemical products and allied industries sector covers all products and industries in the washing and cleaning preparations, oral and dental hygiene soaps, paints and matches.

Table 5.8 shows that manganese oxide is the highest exportable chemical product in the Mpumalanga Province with an RCA of 28.60 and an export customs value of R28 million.

The second highest product is oral and dental hygiene preparations with an RCA of 25.76 and an export customs value of R39 million, followed by washing and cleaning preparations with an RCA of 23.45 and a customs value of R39 million. The rest of the top ten products consist of organic surfactant washing and cleaning preparations with an RCA of 19.81, polyester based paints (18.58), acrylic and vinyl polymer

based paint (17.60), polymer based paints (10.16), matches (10.02), soap (3.66) and composite diagnostic or laboratory reagents (2.33).

Table 5.8: The Mpumalanga Province's ten largest competitive products in the chemical and allied industry chapter

Chemicals & allied industries Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
282090	Manganese oxides other than manganese dioxide	R28,3 million	R71,9 million	28.60
330690	Oral & dental hygiene preparations, except dentifrice	R39,8 million	R112,4 million	25.76
340220	Washing and cleaning preparations, retail	R39,7 million	R122,9 million	23.45
340290	Organic surfactant washing, cleaning preparations	R56,5 million	R207,3 million	19.81
320810	Polyester based paints, varnishes, non-aqueous medium	R14,6 million	R57,4 million	18.58
320910	Acrylic & vinyl polymer based paint, varnish	R18,7 million	R77,5 million	17.60
320990	Polymer based paints & varnishes, aqueous medium	R12 million	R86,3 million	10.16
360500	Matches	R12,1 million	R88,2 million	10.02
340119	Soaps for purposes other than toilet soap, solid	R17,1 million	R339,1 million	3.66
382200	Composite diagnostic or laboratory reagents	R10,1 million	R316,1 million	2.33

Source: Author's own calculations

The three highest exportable products in terms of customs value, are organic surfactant washing and cleaning preparations (R56 million), oral and dental hygiene preparations (R39 million) followed by washing and cleaning preparations (R39 million).

The RCA values differ between different products due to the custom values for the specific product for South Africa that is not the same for each product.

5.3.6 Plastic and Rubber

This "chapter" includes plastic and rubber products for both industrial and household use.

Table 5.9: The Mpumalanga Province's ten largest competitive products in the plastic and rubber chapter

Plastic and rubber Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
391731	Plastic tube, pipe or hose, flexible, mbp > 27.6 MPa	R9,9 million	R28,7 million	25.15
391739	Plastic tube, pipe or hose, flexible,	R24,6 million	R83,3 million	21.50
391723	Tube, pipe or hose, rigid, of polyvinyl chloride	R14 million	R65,5 million	15.61
391740	Fittings for plastic tube, pipe or hose	R12,2 million	R62,5 million	14.20
392020	Sheet/film not cellular/reinforced polymers of propylene	R10 million	R75,1 million	9.70
392330	Plastic carboys, bottles and flasks	R16,2 million	R223,5 million	5.26
392690	Plastic articles	R23,8 million	R365,8 million	4.74
392010	Sheet/film not cellular/reinforced polymers of ethylene	R6,6 million	R139,9 million	3.47
392350	Plastic stoppers, lids, caps and other closures	R6,5 million	R296,3 million	1.60
401120	Pneumatic tyres new of rubber for buses or lorries	R14 million	R711,4 million	1.43

Source: Author's own calculations

Table 5.9 shows that plastic tubing with an RCA of 25.15 and an export value of R9.9 million is the highest export product of this chapter in the Mpumalanga Province when considering its competitive advantage. The second highest product is normal plastic tube with an RCA of 21.50 and an export customs value of R24 million, followed by polyvinyl tube with an RCA of 15.61 and a customs value of R14 million. The rest of the top ten products consist of plastic tube fittings with an RCA of 14.20, propylene sheet (9.70), plastic carboys (5.26), plastic articles (4.74), ethylene sheet (3.47), plastic stoppers (1.6) and pneumatic tyres (1.43). The three highest exported products in terms of customs value are normal plastic tube (R24 million), plastic articles (R23 million) and plastic carboys (R16 million).

Table 5.9 depicts that the plastic sector dominate the rubber sector when considering the ten products listed in this table.

5.3.7 Raw hides, skins, leather, furs and hunting industries

The following section describes the ten products with the highest values in the Mpumalanga Province under the section of hides, skins, leather and furs. With the Kruger National Park and several other nature reserves and game farms in the Mpumalanga Province with their vast variety of wild animals, the hide, skin, leather and fur industry in the Mpumalanga Province is growing.

Table 5.10 depicts that leather gloves and mittens are the highest exportable product in the Mpumalanga Province with an RCA of 16.17 and an export customs value of R2 million. The second highest product is fibre and paperboard handbags with an RCA of 15.14 and an export customs value of R656 thousand, followed by leather articles with an RCA of 5.78 and a customs value of R191 thousand.

Table 5.10: The Mpumalanga Province's ten largest competitive products in the raw hide, skin, leather, furs and hunting industry chapter

Raw hide, skin, leather, furs & hunting Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
420329	Leather, composition gloves & mittens, except sports	R2 million	R9,3 million	16.17
420229	Handbags, of vulcanised fibre or paperboard	R656 thousand	R3,1 million	15.14
420310	Articles of apparel of leather or composition leather	R191 thousand	R2,4 million	5.78
420330	Belts and bandoliers of leather or composition leather	R340 thousand	R6,5 million	3.77
420219	Trunks, suitcases and similar containers, outer	R480 thousand	R10,6 million	3.26
420292	Containers, outer surface plastic or textile	R204 thousand	R13,1 million	1.12
420299	Gun, musical instrument, camera, cases	R1 million	R69,9 million	1.10
420221	Handbags with outer surface of leather	R332 thousand	R31 million	0.78
420100	Saddlery and harness, of any material	R202 thousand	R30,5 million	0.48
420500	Articles of leather and composition leather	R151 thousand	R42 million	0.26

Source: Author's own calculations

The three highest exported products in terms of customs value are leather gloves and mittens (R2 million), musical instruments and gun cases (R1 million), and paperboard handbags (R656 thousand). The significance in Table 5.10 is that all the export customs value and RCA's, are closely in line with each other with little key points to notice.

5.3.8 Wood and wood products

The wood and wood products sector includes all products of wood, from the raw material up until the wood is reworked (processed) into a certain product, such as carton boxes, poles, paper, doors and books - as can be gathered from the information in Table 5.11.

Table 5.11 shows that softwood lumber is the highest exportable product in the Mpumalanga Province with an RCA of 37.55 and an export customs value of R27 million.

Table 5.11: The Mpumalanga Province's ten largest competitive products in the wood and wood product chapter

Wood & wooden products Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
440710	Lumber, coniferous (softwood) thickness < 6 mm	R27,1 million	R52,5 million	37.55
440310	Poles, treated or painted with preservatives	R18,3 million	R54,9 million	24.31
491199	Printed matter	R22,6 million	R72,9 million	22.57
440799	Lumber, non-coniferous	R7,1 million	R27,8 million	18.74
440130	Sawdust, wood waste or scrap	R6,7 million	R33,7 million	14.60
482110	Paper labels of all kinds, printed	R12,3 million	R77,4 million	11.54
481910	Cartons, boxes & cases, of corrugated paper or board	R33,6 million	R221,4 million	11.03
481920	Cartons, boxes & cases, folding, non-corrugated paper	R14,6 million	R156,9 million	6.78
441820	Doors, frames and thresholds, of wood	R7,7 million	R164,4 million	3.41
490199	Printed reading books, except dictionaries	R8,5 million	R440 million	1.41

Source: Author's own calculations

The second highest product is poles with an RCA of 24.31 and an export customs value of R18 million, followed by printed matter with an RCA of 22.57 and a customs value of R22 million. The rest of the top ten products consist of lumber with an RCA of 18.74, saw dust (14.60), paper labels (11.54), paper carton boxes (11.03), non-corrugated carton boxes (3.41), door frames (3.41) and printed reading books (1.41). The three highest exportable products in terms of customs value are paper carton boxes (R33 million), lumber (R27 million) and printed matter (R22 million).

The low comparative advantage of printed books and wood products, like doors and wooden frames, is concerning. It indicates that the region is a leader in raw materials, but weak in adding value. This merits attention as it can improve wealth and employment in the Mpumalanga Province.

5.3.9 Textiles

The textile sector of the Mpumalanga Province is one of the least attractive industries as it has low customs values for specific products, even though the RCA is high. The textile industry includes carpets, material and clothing for women, men and children.

Table 5.12 shows that knitted garments are the most competitive in this chapter of the Mpumalanga Province, with an RCA of 12.17 and exports of R2 million. The second highest product is synthetic textile materials with an RCA of 9.43 and an export customs value of R879 thousand, followed by carpets with an RCA of 6.58 and a customs value of R3 million. The rest of the top ten products consist of men's and boys' jackets with an RCA of 5.56, towel articles (3.27), articles of yarn strips (3.01), women's and girls' trousers (1.54), men's and boys' shirts (0.59), men's and boys' trousers (0.46) and other textile products (0.37).

The three highest exported products in terms of customs value are carpets (R3 million), material garments (R2 million) and men's and boys' jackets (R889 thousand). Men's and boys' shirts and trousers and textile products are at a comparative disadvantage for the Mpumalanga Province because of their RCA's that are below zero.

Table 5.12: The Mpumalanga Province's ten largest competitive products in the textile industry chapter

Textiles Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
611490	Garments of materials, knitted	R2,2 million	R13,1 million	12.17
540490	Strip, straw, synthetic textile material,< 5 mm thick	R879 thousand	R6,7 million	9.43
570390	Carpets of materials, tufted	R3 million	R33,9 million	6.48
620339	Men's, boys' jackets & blazers, material, not knit	R889 thousand	R11,6 million	5.56
560110	Sanitary towels, diapers and similar articles	R402 thousand	R8,9 million	3.27
560900	Articles of yarn strip, twine, cordage or rope	R258 thousand	R6,2 million	3.01
620469	Women's, girls' trousers, shorts, material, not knit	R242 thousand	R11,4 million	1.54
620590	Men's, boys' shirts, of material, not knit	R264 thousand	R32,8 million	0.59
620349	Men's, boys' trousers & shorts, material, not knit	R292 thousand	R46,1 million	0.46
591190	Textile products and articles for technical uses	R406 thousand	R80 million	0.37

Source: Author's own calculations

5.3.10 Footwear and Headgear

The footwear and headgear industry in the Mpumalanga Province is also an industry that is facing strain from competitive industries in the same sector providing footwear and headgear, mainly safety and mining gear. As the mining sector in South Africa is one of the largest industries, the market for safety and mining gear is a prosperous market. Table 5.13 provides the current custom values for footwear and headgear which is unremarkable, similar to the textile sector. Gaining competitive advantage in this sector will effectively enhance the Mpumalanga Provinces' export activity in this specific industry.

Table 5.13 shows that rubber and plastic headgear with an RCA of 11.14 and an export customs value of R202 thousand is the highest export product in the Mpumalanga Province, when taking competitive advantage in consideration. In most countries occupational health and safety regulations demand the usage of protective

headgear on construction, building and engineering sites, which ensures a continuous market demand for these products.

Table 5.13: The Mpumalanga Province's ten largest competitive products in the footwear and headgear chapter

Footwear and headgear Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
650691	Headgear of rubber or plastic	R202 thousand	R1,3 million	11.14
640199	Waterproof footwear(Wellington) no toe-cap	R220 thousand	R7 million	2.28
640340	Footwear, uppers of leather with metal toe-cap	R914 thousand	R41 million	1.62
640411	Sports footwear, sole rubber or plastic, upper textile	R160 thousand	R8,7 million	1.33
640590	Footwear	R229 thousand	R12,7 million	1.31
650610	Safety headgear	R260 thousand	R31,3 million	0.60
640192	Waterproof footwear (Wellingtons), no toe-cap, over ankle	R81 thousand	R9,9 million	0.59
640110	Waterproof footwear (Wellingtons), metal toe-cap	R855 thousand	R123 million	0.51
640399	Footwear, sole rubber, plastics uppers of leather	R101 thousand	R41,9 million	0.18
640299	Footwear, outer soles/uppers of rubber or plastic	R96 thousand	R64,7 million	0.11

Source: Author's own calculations

The second highest product is waterproof footwear with an RCA of 2.28 and an export customs value of R220 thousand, followed by leather footwear with an RCA of 1.62 and a customs value of R914 thousand.

The rest of the top ten products in this chapter consist of sports footwear with an RCA of 1.33, footwear (1.31), other safety headgear (0.60), Wellington waterproof footwear with no toe-cap (0.59), Wellington waterproof footwear with metal toe-cap (0.51), footwear with sole rubber (0.18) and footwear with outer plastic soles (0.11). The three highest exported products in terms of customs value are leather footwear (R914 thousand), Wellington waterproof footwear with metal toe-cap (R855 thousand) and safety headgear (R260 thousand). Five out of the ten products in Table 5.13 has an RCA value below zero, indicating that other safety headgear, Wellington waterproof footwear with no toe-cap and with metal toe-caps, as well as

footwear with rubber soles and plastic soles, have no comparative advantage in the Mpumalanga Province.

5.3.11 Stone and glass

This industry includes all glass and stone articles. This industry, taken into account the low custom values for textiles, as well as the footwear and headgear industry, has significantly improved its custom values. Table 5.14 depicts all glassware and stone products, such as glass containers, ceramic bathroom items and also safety glass for windscreens.

Table 5.14 depicts that insulating units of glass, with an RCA of 25.06 and an export customs value of R2 million, is the highest exported product in the Mpumalanga Province, and also the most competitive when considering the RCA value.

Table 5.14: The Mpumalanga Province's ten largest competitive products in the stone and glass chapter

Stone & glassware Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
700800	Multiple-walled insulating units of glass	R2 million	R6 million	25.06
680919	Plaster boards etc not ornamental, reinforced	R728 thousand	R4,6 million	11.34
680690	Mineral heat or sound insulating materials & articles	R739 thousand	R6,7 million	7.92
701090	Glass containers for packing or conveyance goods	R14,8 million	R200,8 million	5.36
700729	Safety glass, laminated, non vehicle use	R689 thousand	R18,3 million	2.73
700510	Float glass sheets, absorbent or reflecting layer	R1,2 million	R39,1 million	2.23
691090	Ceramic bathroom & kitchen sanitary items, not porcelain	R1,3 million	R54,5 million	1.83
690290	Refractory bricks	R594 thousand	R26,1 million	1.65
701990	Glass fibres, glass wool and articles thereof	R589 thousand	R45,3 million	0.94
690890	Glazed ceramic flags, tiles wider than 7 cm	R1,3 million	R143,2 million	0.68

Source: Author's own calculations

The second highest product is plaster board with an RCA of 11.34 and an export customs value of R728 thousand, followed by mineral heat articles, with an RCA of 7.92 and a customs value of R739 thousand.

The rest of the top ten products in this chapter consists of glass containers with an RCA of 5.36, safety glass (2.73), float glass (2.23), ceramic bathroom kitchen sanitary items (1.83), refractory bricks (1.65), glass fibres (0.94) and glazed ceramic flags (0.68). The three highest exported products in terms of customs value, are glass containers (R14 million), insulating units of glass (R2 million) and ceramic bathroom and kitchen sanitary items (R1 million).

From Table 5.14 the conclusion can be made that glass is the dominant sector in this chapter.

5.3.12 Metals

The metal industry is one of importance for the South African economy as it is one of the industries with large export growth rates. Unfortunately this is also an industry that is vulnerable to threats from the market as the buying and selling prices for metals is constantly fluctuating. The metals sector is a highly competitive industry and, as can be seen from Table 5.15, the Mpumalanga Province has a comparative advantage in this industry.

Table 5.15 shows that articles of manganese and scrap metal is the highest exportable metal product in the Mpumalanga Province, with an RCA of 72.31 and an export customs value of R567 million. The second highest product is flat rolled coils with an RCA of 24.14 and an export customs value of R17 million, followed by alloy steel with an RCA of 15.37 and a customs value of R42 million. The rest of the top ten metal products consists of hot rolled stainless steel coils 3 to 4.75mm thick, with a RCA of 11.49, articles of aluminium (10.16), hot rolled stainless steel coils, 4.75 to 10mm thick (9.87), Cold rolled stainless steel, 1.0 to 3.0mm thick (2.73), Ferro-chromium (1.64), Cold rolled stainless steel, 0.5 to 1.0mm thick (1.41) and iron steel structures (0.80).

Table 5.15: The Mpumalanga Province's ten largest competitive products in the metals chapter

Metals Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
811100	Manganese, articles thereof, waste or scrap	R567,6 million	R570,3 million	72.31
720837	Flat rolled prod/coils<4.75	R17,7 million	R53,3 million	24.14
722860	Bar/rod, alloy steel	R42,8 million	R202,2 million	15.37
721913	Hot rolled stainless steel coil, w >600mm, t 3-4.75mm	R127 million	R803,7 million	11.49
761699	Articles of aluminium	R21,7 million	R155,3 million	10.16
721912	Hot rolled stainless steel coil, w >600mm, t 4.75-10m	R71,4 million	R526,4 million	9.87
721933	Cold rolled stainless steel, w >600mm, t 1.0-3.0 mm	R57,3 million	R1,5 billion	2.73
720241	Ferro-chromium, >4% carbon	R549,7 million	R24,4 billion	1.64
721934	Cold rolled stainless steel, w >600mm, t 0.5-1.0 mm	R18,8 million	R969,6 million	1.41
730890	Structures and parts of structures, iron or steel	R25,7 million	R2 billion	0.80

Source: Author's own calculations

The three highest exported products in terms of customs value are manganese articles (R567 million), ferro-chromium (R549 million) and hot rolled stainless steel coils, 3 to 4.75mm thick (R127 million).

Taking this into consideration, the Mpumalanga Province has an excellent comparative advantage in manganese and by effectively enhancement of this product, the economic activity may experience significantly high export growth.

5.3.13 Electrical machinery

Electrical machinery includes all transportation vehicles, components both mechanical and electrical, as well as pumps. This industry, along with other industries discussed earlier, may have some difficulties to gain remarkable export growth. Table 5.16 shows that transporter or bridge cranes is the highest exported product in the Mpumalanga Province, with an RCA of 8.50 and an export customs value of R13 million.

Table 5.16: The Mpumalanga Province's ten largest competitive products in the electrical machinery chapter

Electrical machinery Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
842619	Transporter or bridge cranes	R13,9 million	R119,1 million	8.50
842920	Graders and levellers, self-propelled	R7,9 million	R169,7 million	3.42
841459	Electric fans, motor > 125 watts	R3,6 million	R125,3 million	2.11
842951	Front-end shovel loaders	R7,8 million	R330 million	1.72
853690	Electrical switch, protector, connecter for < 1kV	R3,5 million	R172,9 million	1.48
848180	Taps, cocks, valves and similar appliances	R5,7 million	R563,3 million	0.74
842959	Earth moving/road making equipment, self-propelled	R3,5 million	R503 million	0.51
843149	Parts of cranes , work-trucks, shovels, construction machines	R6,6 million	R977,9 million	0.49
841381	Pumps	R3,4 million	R561,4 million	0.44
847330	Parts and accessories of data processing equipment	R3,7 million	R672,3 million	0.40

Source: Author's own calculations

The second highest product is self-propelled graders and levellers with an RCA of 3.42 and an export customs value of R7 million, followed by motor electric fans with an RCA of 2.11 and a customs value of R3 million. The rest of the top ten products of the electrical machinery chapter consist of front-end shovel loaders with an RCA of 1.72, electrical switches (1.48), taps and valves appliances (0.74), self-propelled earth moving equipment (0.51), parts of cranes (0.49), pumps (0.44) and data processing equipment (0.40).

The three highest exported products in terms of customs value are transporter or bridge cranes (R13 million), self-propelled graders and levellers (R7.9 million) and front-end shovel loaders (R7.8 million). The last five products in Table 5.16 are products with comparative disadvantage in the Mpumalanga Province.

5.3.14 Transportation

The transportation industry for this section includes all vehicles. From cars, trucks, motor bicycles to trailers, as well as parts for this type of transportation, are listed in

Table 5.17. Transportation equipment forms an important link between the industry and its stakeholders. Table 5.17 lists the top 10 products with the highest comparative advantage in the Mpumalanga Province along with the customs values and the calculated comparative advantage (RCA).

Table 5.17 depicts that trucks with an RCA of 16.83 and an export customs value of R13 million, is the biggest export product in the Mpumalanga Province when the RCA indices of the transportation industry is taken into consideration. The second highest product in this chapter is diesel powered trucks weighing more than 20 ton with an RCA of 2.80 and an export value of R1 million. The rest of the eight products are at a comparative disadvantage towards the Mpumalanga Province. Wheeled tractors have a RCA of 0.50, trailers (0.35), motor vehicle components (0.35), diesel powered trucks weighing between 5 to 10 ton (0.28), drive axles (0.19), buses (0.10), automobiles (0.01) and diesel powered trucks weighing less than 5 ton only have an RCA of 0.01. It must also be taken into consideration that the abovementioned transport figures could also be as a result of value added.

Table 5.17: The Mpumalanga Province's ten largest competitive products in the transportation sector

Transportation industry Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
870490	Trucks	R13,7 million	R59,2 million	16.83
870423	Diesel powered trucks weighing > 20 ton	R1 million	R26,4 million	2.80
870190	Wheeled tractors	R1,2 million	R178,4 million	0.50
871639	Trailers for the transport of goods	R1,1 million	R175 million	0.50
870899	Motor vehicle parts	R5,7 million	R1,2 billion	0.35
870422	Diesel powered trucks weighing 5-20 ton	R1,2 million	R311,4 million	0.28
870850	Drive axles with differential for motor vehicles	R788 thousand	R300,9 million	0.19
870290	Buses except diesel powered	R1,2 million	R835,9 million	0.10
870323	Automobiles, spark ignition engine of 1500-3000 cc	R2,9 million	R17,1 billion	0.01
870421	Diesel powered trucks weighing < 5 ton	R1 million	R7,2 billion	0.01

Source: Author's own calculations

In terms of export volumes, Table 5.17 reflects trucks also have a customs value of R13 million and is the largest exported product in the Mpumalanga Province in the transport sector. The second highest export is motor vehicle components (R5.7 million), followed by automobiles, wheeled tractors with the third highest RCA value of 0.50 and diesel powered trucks. These products are only listed in table 5.17 due to their high export values ranging between R1 million to R5 million.

5.3.15 Miscellaneous

The miscellaneous chapter includes all chapters as per the HS code system from chapters 90 to 99. This section includes all random products that are difficult to divide under another heading. Products include alarm clocks, office furniture, and ballpoint pens. Table 5.18 lists the top 10 products under this heading.

Table 5.18 depicts that parts and accessories for photographic cameras with an RCA of 7.77 and an export customs value of R1.6 million, is the highest export product in the Mpumalanga Province when considering its competitive advantage and also its current exports.

Table 5.18: The Mpumalanga Province's 10 highest competitive products in the miscellaneous sector

Miscellaneous chapter Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
900691	Parts and accessories for photographic cameras	R1,6 million	R15,4 million	7.77
960810	Ball point pens	R881 thousand	R28,1 million	2.27
940370	Furniture, plastic	R1,1 million	R38 million	2.18
940330	Office furniture, wooden	R1,9 million	R69,1 million	2.00
940540	Electric lamps, lighting fittings	R963 thousand	R130,2 million	0.54
903289	Automatic regulating/controlling equipment	R2,7 million	R581 million	0.35
940360	Furniture, wooden	R690 thousand	R157,5 million	0.32
940600	Prefabricated buildings	R1,2 million	R302,1 million	0.29
902830	Electricity supply, production and calibrating meters	R1,6 million	R480 million	0.25
903180	Measuring or checking equipment	R747 thousand	R641,1 million	0.08

Source: Author's own calculations

The second highest product is ball point pens with an RCA of 2.27 and an export customs value of R881 thousand, followed by plastic furniture with an RCA of 2.18 and an export customs value of R1.1 million. The rest of the seven products have a comparative disadvantage in the Mpumalanga Province concerning exports.

Wooden office furniture with an RCA equal to 2, electrical lamps (0.54), automatic regulating equipment (0.35), wooden furniture (0.32), prefabricated buildings (0.29), electricity supply meters (0.25) and measuring or checking equipment (0.08) all have a competitive disadvantage. These products are only listed in table 5.18 due to their high custom values ranging between R700 thousand and R2 million. Table 5.18 shows the custom values and RCA values that are less significant and not vital for export promotion. Except for parts and accessories for photographic cameras, the competitive position of all these industries in this chapter is insignificant.

This section focused on the specific products in the Mpumalanga Province. Each product, along with its competitive position (RCA value) and custom value (current size of exports), has been interpreted under each chapter division. The subsequent section will emphasize each chapter's top product and will be discussed next.

5.4 TOP COMPETITORS IN THE MPUMALANGA PROVINCE

The top competitors in the Mpumalanga Province, with the highest comparative advantage (RCA), were taken from all the estimations and compared to the other products with a high comparative advantage. Each one of these products plays a significant role in enhancing the Mpumalanga Province's trade in each important sector of the province. These top achiever industries, products or sectors are shown in Table 5.19. It should be noted that Table 5.2 only considered the ten largest exporters, whether they were internationally competitive or not. Table 5.19 now considers the products or industries that are overall most competitive in the province and have the potential to experience sustained export growth in the long-run. These are not just the top industries in every chapter, but the top 15 competitors, irrespective of their chapters.

The first product in Table 5.19 is from the metals industry. Articles of manganese and scrap metal manganese is the most competitive exportable product of the Mpumalanga Province with an RCA of 72.31 and an export customs value of R567 million. The product in the second place in the Mpumalanga Province is salted bovine meat (beef), from the animals and animal products chapter, with an RCA of 61.10 and exporting a volume of R8.1 million from Mpumalanga Province annually. Tomatoes - from the vegetable products industry - are in the third position with an RCA of 60.20 and customs value of R8.7 million.

Table 5.19: The Mpumalanga Province's highest exportable products

Mpumalanga province's top competitors Tariff heading & description		Mpumalanga's export of specific product (R)	South Africa's total export of specific product (R)	RCA
811100	Manganese, articles thereof, waste or scrap	R567,6 million	R570,3 million	72.31
021020	Bovine meat, salted, dried or smoked	R8 million	R9,6 million	61.10
070200	Tomatoes, fresh or chilled	R8,7 million	R10,4 million	60.20
200830	Citrus fruits, otherwise prepared or preserved	R20,8 million	R28,2 million	53.50
440710	Lumber, coniferous (softwood) thick s < 6 mm	R27,1 million	R52,5 million	37.55
030374	Mackerel, frozen, whole	R12 million	R16,3 million	53.43
170410	Chewing gum containing sugar, except medicinal	R19,2 million	R38,7 million	36.00
210410	Soups and broths and preparations thereof	R105,8 million	R219,3 million	35.05
282090	Manganese oxides other than manganese dioxide	R28,3 million	R71,9 million	28.60
330690	Oral & dental hygiene preparations, except dentifrice	R39,8 million	R112,4 million	25.76
391731	Plastic tube, pipe or hose, flexible, mbp > 27.6 MPa	R9,9 million	R28,7 million	25.15
700800	Multiple-walled insulating units of glass	R2 million	R6 million	25.06
230400	Soybean, oil-cake and other solid residues	R21,4 million	R63,3 million	24.60
440310	Poles, treated or painted with preservatives	R18,3 million	R54,9 million	24.31
720837	Flat rolled prod/coils<4.75	R17,7 million	R53,3 million	24.14

Source: Author's own calculations

Citrus fruit products are from the foodstuff industry and is the fourth highest exportable product in the Mpumalanga Province with an RCA of 53.50 and an export customs value of R20 million, followed by softwood lumber. Softwood lumber – from the wood and wood product industry - is the highest exportable product in the Mpumalanga Province and has an RCA of 37.55 and an export customs value of R27 million.

In the sixth place is frozen fish with an RCA of 35.5, followed by chewing gum which contains sugar. The Mpumalanga Province exports annually chewing gum in excess of R19 million. This product has a high competitive advantage, with an RCA equal to 36. Next to this chapter are soups and broths with an RCA of 35.05, which is still internationally very competitive.

Manganese oxides from the chemical and allied industry, with an RCA of 28.60, is the highest exportable product in the Mpumalanga Province from this chapter and exports customs value of R28 million annually. There are two manganese products in Table 5.19: manganese products, waste and scrap (metals industry) and manganese oxides (chemicals and allied industry). Manganese products and waste are most commonly used in mining and factories, whereas manganese oxides are most commonly seen as an alloying agent.

Number 10 of top achievers in relation to competitive export positions is oral and dental hygiene preparations with an RCA of 25.76 and exporting nearly R40 million annually.

Eleventh is plastic tubing with an RCA of 25.15 and an export customs value of R9.9 million, which is the highest export product in the plastic and rubber industry. This is followed by units of insulating glass. Insulating glass from the stone and glass industry is the most exportable product within this industry and the province, with an RCA of 25.06 and an export customs value of R2 million annually.

Ranked in the 13th and 14th position of potentially most competitive exportable product lines in the Mpumalanga Province are both from the food industries. Soybean oil-cake and other solid residues have an RCA index of 24.60 and export

about R21.4 million annually, while poles have an RCA equal to 24.31 and export in excess of R183.9 million annually. This represents about a third of South Africa's total production of treated or painted poles.

Listed 15th on the list of top achievers in Table 5.19 is flat rolled metal and coils with a revealed comparative advantage index of 24.14 and already exporting R177.2 million annually.

Other potential exporters that merit attention, due to their high ranking in their particular chapter, are trucks in the transport industry, which has an RCA of 16.83 and an export customs value of R13 million. It is a highly exportable product. Leather gloves and mittens, in the raw hide and leather industry, is the highest exportable product in its chapter in the Mpumalanga Province, with an RCA of 16.17 and an export customs value of R2 million.

Petroleum is the highest exportable product in the mineral product industry with an RCA of 13.57 and an export customs value of R41 million. Knitted garments of material is the highest exportable product in the textile industry with an RCA of 12.17 and an export customs value of R2 million. Rubber and plastic headgear with an RCA of 11.14 and an export customs value of R202 thousand is the highest export product in the Mpumalanga Province and in the footwear and headgear industry. Transporter or bridge cranes is the highest exportable product in the Mpumalanga Province and in the electrical machinery industry with an RCA of 8.50 and an export customs value of R13 million. The last industry in Table 5.19 is miscellaneous articles with accessories for photographic cameras the product with the highest exportable value with an RCA of 7.77 and an export customs value of R1.6 million.

The fifteen products listed in Table 5.19 are Mpumalanga's highest exportable products. The highest exportable product in terms of RCA and customs value is manganese articles, waste and scraps. It is the product with the highest comparative advantage in the province.

The subsequent section will match the products identified by the RCA index with the DSM model to determine whether the products indentified are realistic exportable products with export opportunities abroad for the Mpumalanga Province.

5.5 MATCHING INDUSTRIES WITH THE DSM

Analysis from Decision Support Model (DSM) identified numerous exportable product opportunities for South Africa. In section 5.4 the comparative advantage of products of the Mpumalanga Province were identified through the Revealed Comparative Advantage (RCA) index. The identified products will be matched against the results identified by the DSM over the time period 2001 to 2005. The matching of these products from the RCA to the DSM results will be listed and only the products with the highest RCA value in each table will be discussed as an exportable opportunity.

Table 5.4 lists the products with the highest RCA in the animals and animal product industry. Analysis from the DSM indicates that the following products from Table 5.4 have several opportunities to export to other countries: salted bovine meat, milk, yogurt, cheese, fowls, bird eggs, milk powder and frozen fish. Analysis from the DSM indicates that the following products from Table 5.5 have several opportunities to export to other countries: tomatoes, maize flour, pearled maize, tea, vegetable seed, maize, grapefruit, maize groat, nuts and oranges. These products have the highest RCA in the vegetable product industry. The DSM identified that the most significant importers (the nations with large export values) of salted bovine meat were France (US$ 10 million), the United States of America (USA) (US$ 5.6 million) and Germany (US$ 3.4 million) (Note: Not all this data is depicted on table 5.4. See Annexure A at the end of this dissertation).

Table 5.6 lists the products with the highest RCA in the foodstuff industry. Analysis from the DSM indicates that the following products from Table 5.6 have several opportunities to export to other countries: citrus fruits, chewing gum, soups, soy-bean, refined sugars, chocolate, vegetable juice, juices, raw sugar and food preparations.

Analysis from the DSM indicates that the following products from Table 5.7 have several opportunities to export to other countries: petroleum bitumen, copper ores and concentrates, bituminous mix, chromium ores, Portland cement and bituminous coal. These products have the highest RCA in the mineral product industry.

Table 5.8 lists the products with the highest RCA in the chemicals and allied industries. Analysis from the DSM indicates that the following products from Table 5.8 have several opportunities to export to other countries: manganese oxides, oral and dental hygiene preparations, washing and cleaning preparations, organic surfactant washing and cleaning preparations, polyester based paints, acrylic and vinyl polymer based paint, polymer based paints, matches, soaps and laboratory reagents.

Analysis from the DSM indicates that the following products from Table 5.9 have several opportunities to export to other countries: plastic tube, normal plastic tube, polyvinyl tube, plastic tube fittings, propylene sheet, plastic carboys, plastic articles, ethylene sheet, plastic stoppers and pneumatic tyres. These products have the highest RCA in the plastic and rubber industry.

Table 5.10 lists the products with the highest RCA in the raw hides, skins, leather, furs and hunting industry. Analysis from the DSM indicates that the following products from Table 5.10 have several opportunities to export to other countries: leather gloves and mittens, fibre or paperboard handbags, leather articles, leather belts, suitcases and trunks, containers, musical instruments and gun cases, leather handbags, saddles and harnesses of any material and leather.

Analysis from the DSM indicates that the following products from Table 5.11 have several opportunities to export to other countries: softwood lumber, poles, printed matter, lumber, saw dust, paper labels, paper carton boxes, non-corrugated carton boxes, door frames and printed reading books. These products have the highest RCA in the wood and wood product industry.

Table 5.12 lists the products with the highest RCA in the textile industry. Analysis from the DSM indicates that the following products from Table 5.12 have several

opportunities to export to other countries: knitted garments of material, synthetic textile materials, carpets, men's and boys' jackets, towel articles, articles of yarn strip, women's and girls' trousers, men's and boys' shirts, men's and boys' trousers and textile products.

Analysis from the DSM indicates that the following products from Table 5.13 have several opportunities to export to other countries: rubber and plastic headgear, waterproof footwear, leather footwear, sport footwear, footwear, safety headgear, Wellington waterproof footwear with no toe-cap, Wellington waterproof footwear with metal toe-cap, footwear with sole rubber and footwear with outer plastic soles. These products have the highest RCA in the footwear and headgear industry.

Table 5.14 lists the products with the highest RCA in the stone and glass industry. Analysis from the DSM indicates that the following products from Table 5.14 have several opportunities to export to other countries: insulating units of glass, plaster board, mineral heat, glass containers, glass, float glass, ceramic bathroom and kitchen sanitary items, refractory bricks, glass fibres and glazed ceramic flags.

Analysis from the DSM indicates that the following products from Table 5.15 have several opportunities to export to other countries: manganese waste, flat rolled product coils, alloy steel, hot rolled stainless steel coil 3 to 4.75mm thick, articles of aluminium, hot rolled stainless steel coil, 4.75 to 10mm thick, cold rolled stainless steel, 1.0 to 3.0 mm thick, ferro-chromium, cold rolled stainless steel, 0.5 to 1.0 mm thick and iron steel structure. These products have the highest RCA's in the metal industry.

Table 5.16 lists the products with the highest RCA in the electrical machinery industry. Analysis from the DSM indicates that the following products from Table 5.16 have several opportunities to export to other countries: transporter or bridge cranes, self-propelled graders and levellers, motor electric fans, front-end shovel loaders, electrical switches, taps and valves appliances, self-propelled earth moving equipment, parts of cranes, pumps and data processing equipment.

Analysis from the DSM indicates that the following products from Table 5.17 have several opportunities to export to other countries: trucks and diesel powered trucks weighing more than 20 tonnes. These products have the highest RCA in the transportation industry. The rest of the eight products in Table 5.17 are in a comparative disadvantage towards the Mpumalanga Province but is still found as a match in the analysis of the DSM. The products include: wheeled tractors, trailers, motor vehicle parts, diesel powered trucks weighing between 5 to 10 ton, drive axles, buses, automobiles and diesel powered trucks weighing less than 5 ton.

Table 5.18 lists the products with the highest RCA in the miscellaneous industry. Analysis from the DSM indicates that the following products from Table 5.18 have several opportunities to export to other countries: parts and accessories for photographic cameras, ball point pens and plastic furniture. These products have the highest RCA in the miscellaneous industry. The rest of the seven products in Table 5.18 are in a comparative disadvantage towards the Mpumalanga Province but is still found as a match in the analysis of the DSM. The products include: wooden office furniture, electrical lamps, automatic regulating equipment, wooden furniture, prefabricated buildings, electricity supply meters and measuring or checking equipment.

Table 5.19 listed the exportable products with the highest competitive advantage, according to their RCA values. A list of importing countries and their subsequent export value from the Mpumalanga Province was identified by the DSM. The three importing countries with the highest export value from the province will be discussed next. From Table 5.19 the following conclusions can be drawn:

- The three highest importing countries (the nations with large import values) of manganese articles is Austria (US$ 29.6 million), France (US$ 10.8 million) and Canada (US$ 9.9 million) (Not all the data is depicted in table 5.19. See the Annexure at the end of this dissertation).
- The three highest importing countries (the nations with large import values) of salted bovine meat were France (US$ 10 million), the United States of America (USA) (US$ 5.6 million) and Germany (US$ 3.4 million). (Not all the data is depicted on table 5.19. See Annexure.)

- The three highest importing countries (the nations with large import values) of tomatoes were France (US$ 314.7 million), Canada (US$ 133.5 million) and Romania (US$ 31.9 million). (Not all the data is depicted on table 5.19. See Annexure.)
- The three highest importing countries (the nations with large import values) of citrus fruits were Germany (US$ 44.8 million), China (US$ 18.5 million) and the United Kingdom (UK) (US$ 9 million). (Not all the data is depicted on table 5.19. See Annexure.)
- The three highest importing countries (the nations with large import values) of softwood lumber were Japan (US$ 387.3 million), Egypt (US$ 318.7 million) and the UK (US$ 206.6 million). (Not all the data is depicted on table 5.19. See Annexure.)
- Frozen mackerel was not identified by the DSM as a potential exportable opportunity for South Africa.
- The three highest importing countries (the nations with large import values) of chewing gum were the UK (US$ 6.3 million), Slovakia (US$ 2.9 million) and the United Arab Emirates (US$ 2.4 million). (Not all the data is depicted on table 5.19. See Annexure.)
- The three highest importing countries (the nations with large import values) of soups and broths were the US (US$ 44.1 million), Germany (US$ 39.3 million) and Japan (US$ 13.7 million). (Not all the data is depicted on table 5.19. See Annexure.)
- The three highest importing countries (the nations with large import values) of manganese oxides were Belgium (US$ 2.4 million), Japan (US$ 2 million) and the UK (US$ 1.4 million). (Not all the data is depicted on table 5.19. See Annexure.)
- The three highest importing countries (the nations with large import values) of oral and dental hygiene preparations were the US (US$ 27.5 million), Japan (US$ 18 million) and Germany (US$ 15.6 million). (Not all the data is depicted on table 5.19. See Annexure.)
- The three highest importing countries (the nations with large import values) of plastic tube were the US (US$ 10.5 million), China (US$ 10 million) and Hong

Kong (US$ 9 million). (Not all the data is depicted on table 5.19. See Annexure.)

- The three highest importing countries (the nations with large import values) of insulating glass were the US (US$ 71.5 million), Switzerland (US$ 33.9 million) and Sweden (US$ 8.2 million). (Not all the data is depicted on table 5.19. See Annexure.)
- The three highest importing countries (the nations with large import values) of soybean and oil-cake residues were France (US$ 528.7 million), Netherlands (US$ 384.9 million) and Germany (US$ 336 million). (Not all the data is depicted on table 5.19. See Annexure.)
- The three highest importing countries (the nations with large import values) of poles were Oman (US$ 3.9 million), Qatar (US$ 2.4 million) and Vietnam (US$ 1.7 million). (Not all the data is depicted on table 5.19. See Annexure.)
- The three highest importing countries (the nations with large import values) of flat rolled metal and coils were Turkey (US$ 97.9 million), Belgium (US$ 76.1 million) and Italy (US$ 72.4 million). (Not all the data is depicted on table 5.19. See Annexure.)

The DSM analysis identified potential exportable products for South Africa, for which the country has a competitive advantage and for which realistic international export opportunities exists. These were matched to the industries in the Mpumalanga Province identified in this study to determine whether these products of Mpumalanga Province have international export potential. The above matching of products between the DSM Model and industries with the highest RCA index values has been proven successful. Specific products have been identified with export potential and existing opportunities.

5.6 SUMMARY AND CONCLUSION

A Revealed Comparative Advantage (RCA) index was estimated for the industries of the Mpumalanga Province of South Africa. Data compiled from the South African Revenue Service (SARS) was used, along with the results for the Decision Support

Model (DSM). A structured index was compiled to determine the exportable products for the Mpumalanga Province.

Considering the largest exporters in Mpumalanga (those with the highest customs values), the three products with the highest RCA values across all industries are articles of manganese and waste products (72.31), soups (35.05) and refined sugars (23.98), and they also are the three items with the highest comparative advantage. The three products with the lowest RCA values as well as customs values are lumber, coconuts and iron steel balls. These products all have an RCA value of zero and are seen as a comparative disadvantage toward international exports from the Mpumalanga Province.

In the animals and animal product industry, the three products with the highest RCA values, and thus the products with a high comparative advantage in the Mpumalanga Province, are salted bovine beef meat (61.10), frozen fish (53.43) and bovine cuts (22.39). In the vegetable products chapter the three largest products in terms of RCA consist of tomatoes (60.20), maize flour (12.98) and pearled maize (12.84). In the foodstuff sector the three products with the highest RCA values are citrus fruits (53.50), chewing gum (36) and soups (35.05). In the mineral products industry, petroleum (13.57), copper ores (12.93) and bituminous mix (10.28) are the three products with the highest RCA values.

In the chemical and allied industries the highest exportable products are manganese oxides with an RCA of 28.60, oral and dental hygiene preparations with an RCA of 25.76 and washing and cleaning preparations with an RCA of 23.45. In the plastic and rubber product industry plastic tube (25.15), normal plastic tube (21.50) and polyvinyl tube (15.61) are the three highest exportable products in the Mpumalanga Province. Leather gloves and mittens (16.17), fibre or paperboard handbags (15.14) and leather articles (5.78) are the three highest exportable products in the Mpumalanga Province in the raw hides and leather industry when comparing the RCA's of these products.

In the textile industry, knitted garments of material is the highest exportable product in the Mpumalanga Province with an RCA of 12.17, followed by synthetic textile

materials with an RCA of 9.43 and carpets with an RCA of 6.58. They are the three highest exportable textile products in the Mpumalanga Province, when comparing their RCA values. Units of insulating glass with an RCA of 25.06, plaster board with an RCA of 11.34 and mineral heat articles with an RCA of 7.92, are the three products with the highest RCA's in the stone and glass industry. In the metals industry, manganese articles is the highest exportable product in the Mpumalanga Province with an RCA of 72.31 followed by flat rolled product coils with an RCA of 24.14 and alloy steel with an RCA of 15.37 - implying that they are the highest exportable products in the province and the industry.

Transporter or bridge cranes are the most competitive product in the Mpumalanga Province with an RCA of 8.50. The second highest are self-propelled graders and levellers, with an RCA of 3.42, followed by motor electric fans of the electrical machinery industry, with an RCA of 2.11.

The three highest exportable products in the transport industry of Mpumalanga Province, according to their high RCA values, are trucks (16.83), diesel powered trucks weighing more than 20 ton (2.80) and wheeled tractors (0.50). In the miscellaneous industries the three products with the highest RCA values are accessories for photographic cameras with an RCA of 7.77, ball point pens with an RCA of 2.27 and plastic furniture with an RCA of 2.18.

The first exportable products of the fifteen chapters, in terms of their high RCA values, are: manganese articles and waste (72.31), tomatoes (60.20), salted bovine meat (60.20), citrus fruits (53.50), softwood lumber (37.55), manganese oxides (28.60), plastic tube (25.15), insulating glass (25.06), trucks (16.83), leather gloves and mittens (16.17), petroleum (13.57), knitted garments of material (12.17), rubber and plastic headgear (11.14), transporter or bridge cranes (8.50), accessories for photographic cameras (7.77).

Disregarding the particular chapter grouping, the fifteen products or industries that are overall most competitive, as revealed by the Revealed Comparative Advantage (RCA) indices are, in order of merit: manganese articles and scrap manganese metal (72.31), salted bovine beef meat (60.20), tomatoes (60.20), citrus fruits products

(53.50), softwood lumber (37.55), frozen fish (53.43), chewing gum (36.00), soups and broths (35.05), manganese oxides (28.60), oral and dental heath preparations (25.76), plastic tubing (25.15), insulating glass (25.06), soybean oil-cake and other solid residues (24.60), refined sugar (23.98) and washing and cleaning preparations (23.45).

All the products listed in the tables of the various “chapters” in this study were matched to the results of the Decision Support Model (DSM) to ascertain whether those identified as the most competitive according to their RCA indices, also have realistic international export opportunities. The analysis of the DSM concluded that approximately all the products with the highest RCA values in their subsequent industries are seen as valuable export opportunities.

This chapter investigated all the products in the Mpumalanga Province with the highest revealed comparative advantage value and customs value of the main sectors of the province and matched them with exportable products identified by the DSM.

Chapter 6 will provide a summarised conclusion as well as recommendations for this study, and will be discussed next.

CHAPTER 6: SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

The aim of this study was set in Chapter 1 as to analyse the composition of the Mpumalanga Province's economic activity to determine where the comparative advantage lies regarding exports. Mpumalanga's contribution to South Africa's economy over the past fifteen years was small and insignificant. For that reason it was important to determine the Mpumalanga province's composition of GDP and its dominant sectors and also to conduct and in-depth study into Mpumalanga's export sectors to determine which products has potential export possibilities. Finally the export possibilities were matched to the results of the DSM to determine if products are seen as high export opportunities.

This chapter will provide a summary and recommendations that were derived in this study based on the findings of this study. This chapter will also provide areas of further research.

6.2 SUMMARY AND CONCLUSION

Research has shown that South Africa's regions have been experiencing reasonable export growth, as well as growth in the gross domestic product (GDP), population and skills level. South Africa's provinces have been experiencing difficulties allocating resources for effective export enhancement and promotion. By effective targeting of specific sectors and industries within the South African provinces, provincial government entities might be able to determine which sector or industry could gain the most by effective targeting.

Chapter 1 provided the background of the study on the Mpumalanga Province as well as the motivation and problem statement, research objectives, research question and the research method applicable to this study. The research question of this study was twofold. First, the potential priority exports sectors or industries were determined, such as mining, electricity, agriculture and manufacturing. Secondly, the

outcomes of this study were matched in perfect cohesion to the opportunities presented by the Decision Support Model (DSM). The primary objective of this study was to determine in which sectors or industries the Mpumalanga Province has comparative advantage. This study identified mining, electricity, agriculture and the manufacturing industries as most successful exportable opportunities. In relation to the primary objectives, the secondary objectives further narrowed the scope of this study and provided an economic profile of the Mpumalanga Province, as well as high contributing products or sectors towards the province's GDP and finally provided priority export sectors compiled by using the Revealed Comparative Advantage (RCA) and matched with results from the DSM model.

Chapter 2 reviewed the theoretical determinants of economic growth, export promotion and the decision support model (DSM). Theories from Keynes, the Neo-Classical Model and the Endogenous Growth Theory explained the theoretical aspects and concluded that exports are sustainable, that technological innovation, saving, depreciation and population growth cause economic growth and finally, that constant levels of capital and labour result in economic growth. The subsequent determinants of economic growth were discussed: investment, human capital, openness to trade, foreign direct investment, political issues and export-led growth. Finally the theoretical aspects of the RCA and DSM were discussed in this chapter the DSM was developed to prioritise export assistance to potentially successful exporters from South Africa and to identify products with high export potential.

Chapter 3 provided an overview of the socio-economic outlook and infrastructure of the Mpumalanga Province. Favourable GDP and GVA growth rates, as well as positive growth in the trade sector, Mpumalanga's exports as a percentage of GDP, total trade as a percentage of GDP, and the regional share of exports and imports were highlighted. The economic sectors of the province were also discussed in detail and it was concluded that the largest contributors in 2010 were mining, electricity, agriculture and manufacturing.

Chapter 4 reviewed the research method utilised in this study. Post office codes, tariff heading and the customs value data from the South African Revenue Services (SARS) were used. An explanation on how the harmonised system codes work and

how the tariff headings are compiled was also provided. The sectors and industries (identified in chapter 3) were then divided into the relevant 15 “chapters” of the HS. After filtering the data compiled by SARS, products were identified to determine the comparative advantage of products in sectors or industries (which were now divided into chapters), and the RCA Index was explained.

The RCA determined specific products with RCA values larger than one, which are the products identified in the sectors or industries that the Mpumalanga Province will be relatively specialising in, implying that Mpumalanga has a revealed comparative advantage in that specific product. If the RCA value is smaller than one a comparative disadvantage will occur. Products with high RCA values were then matched with realistic export opportunities provided by the DSM that may effectively enhance the Mpumalanga Province’s export activities. The DSM is based on planning and assessment of export promotion activities and works through a process of four filters, where each filter is used for a specific task to finally provide a list of potential export opportunities that a country can use to enhance their exports.

In chapter 5 the RCA indices were estimated and a list of products was compiled under each chapter, sorted according to the highest RCA values. Subsequently, the ten most competitive products in terms of their RCA values, under each chapter, were discussed. The product with the highest RCA value across all 15 industries, and therefore providing the Mpumalanga Province with a comparative advantage as well as endless export opportunities, is manganese articles with an RCA index of 72.31. Manganese articles were matched to the results from the DSM to determine whether possible export opportunities exist for this product. The DSM provided a list of countries that could provide export opportunities for the Mpumalanga Province for this product. Austria, France and Canada (in terms of their high importing values from South Africa) were the three countries identified that could provide the Mpumalanga Province with reliable export opportunities.

The analysis of the DSM on all the products concluded that approximately all the products identified with the highest RCA values in their subsequent industries are also seen to have valuable export opportunities. Five products could not been matched with the DSM as the model does not perceive them as valuable export

opportunities for the time being. The products, excluded from the DSM even though they have high RCA values, include: frozen fish, bovine cuts, coal briquettes, light petroleum distillates and aviation spirits. It might be that these products have a potential competitive advantage, but that the opportunities have not yet been recognised. This chapter discussed all the products in the Mpumalanga Province with high revealed comparative advantage indices and large customs values, divided into main sectors ("chapters") of the province and matched with exportable products identified by the DSM.

This study has made the following important contributions. First, the sector that provides the Mpumalanga Province with the highest export opportunities is the metals industry. Secondly, manganese articles from the same industry was identified as the most realistic export opportunity that will help enhance the Mpumalanga Provinces' export activity in South Africa. Finally, five products were identified with additional export opportunities as they were not listed in the DSM, but also have potential to enhance the export activity in the province.

Overall the potentially most competitive products internationally are: manganese articles and waste metal, tomatoes, citrus fruits products, softwood lumber, chewing gum, soups and broths, manganese oxides, oral and dental heath preparations, plastic tubing, insulating glass, soybean oil-cake and other solid residues, refined sugar and washing and cleaning preparations.

6.3 RECOMMENDATIONS

The availability of research on exportable products that exist on provincial level in South Africa is not sufficient to provide provinces with the needed tools to enhance their own export activity. This study made some contribution in that regard. Compiling data and finding relevant research on provincial level also causes constraints, as data is not updated annually, is difficult to access. The issue of limited research on the Mpumalanga Province can be resolved by the South African government granting the province the necessary funds in order to enable provincial governments to conduct additional research. This might for example be done in co-operation with a university, either public or private.

A recommendation towards the Mpumalanga Province would be for the provincial government to provide needed attention, specifically to the promotion and added research to the following five products as they have exportable potential: frozen fish, bovine cuts, coal briquettes, light petroleum distillates and aviation spirit.

Research regarding the RCA indicators of comparative advantage, matched with the Decision Support Model (DSM), similar to this current study on Mpumalanga should also be extended to the other provinces. Even though there is a clear comparison with the RCA and DSM, it should not be confused with being the same model. There are still clear differences between the two models. It is important in the light of wealth creation and the generation of job opportunities in South Africa. The current study only considered the largest 150 exporters in Mpumalanga Province, but there might be some industries that do not export yet and do have large competitive potential. The RCA index can also be extended by not only using the South African data, but using world data as well.

Expanding this study to include all the thousands of other industries that were not considered in this study, might be a worthwhile exercise. RCA values can also be determined relative to world values and then compared to results from this study.

Recommendations regarding the product identified as the highest export potential in the Mpumalanga Province, namely manganese articles, include:

- identifying companies involved in the production of this product and providing the companies with grants to further promote the product.
- expanding further research on the development of this product to add value to the product.
- identifying additional geographical areas or locations to enhance production of this product.
- conducting in-depth research of additional uses and applications of this product.
- promoting this product in the countries identified as reliable export opportunities by means of trade shows and trade magazines.

This study set the task to identify globally competitive economic products, sectors and industries in the Mpumalanga Province which have export potential to enhance

effective export promotion. This was accomplished by estimating the revealed comparative advantage of products and industries and matching it with the results of the Decision Support Model. Much information was obtained and the most important findings were reported in this dissertation. The major contribution of this study is that it provides potential exporters, and especially export agencies, with a scientific instrument to identify products and industries that offer the most potential to effectively enhance export promotion and sustain creation of wealth and employment opportunities in the region. This should be an ongoing research project, updated continually and extended to all the regions and provinces of South Africa.

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ANNEXURE

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
020714 - Fowls, cuts & offal, frozen	$458 235	China	Lower-middle income economies
020714 - Fowls, cuts & offal, frozen	$236 227	Hong Kong	High income economies
020714 - Fowls, cuts & offal, frozen	$139 183	Netherlands	High income economies
021020 - Bovine meat salted, dried or smoked	$10 092	France	High income economies
021020 - Bovine meat salted, dried or smoked	$5 626	United States	High income economies
021020 - Bovine meat salted, dried or smoked	$3 456	Germany	High income economies
030379 - Fish, frozen, whole	$80 080	China	Lower-middle income economies
030379 - Fish frozen, whole	$72 140	Japan	High income economies
030379 - Fish frozen, whole	$23 742	United States	High income economies
040120 - Milk not concentrated nor sweetened 1-6% fat	$1 865	Italy	High income economies
040120 - Milk not concentrated nor sweetened 1-6% fat	$1 004	Bulgaria	Upper-middle income economies
040120 - Milk not concentrated nor sweetened 1-6% fat	$483	Germany	High income economies
040210 - Milk powder < 1.5% fat	$101 285	Malaysia	Upper-middle income economies
040210 - Milk powder < 1.5% fat	$94 318	Saudi Arabia	High income economies
040210 - Milk powder < 1.5% fat	$63 295	Indonesia	Lower-middle income economies
040310 - Yogurt	$5 906	Germany	High income economies
040310 - Yogurt	$4 993	France	High income economies
040310 - Yogurt	$2 287	United Kingdom	High income economies
040690 - Cheese except fresh, grated, processed or blue-veined	$181 877	Germany	High income economies
040690 - Cheese except fresh, grated, processed or blue-veined	$94 371	Japan	High income economies
040690 - Cheese except fresh, grated, processed or blue-veined	$49 183	France	High income economies
040700 - Bird eggs, in shell, fresh, preserved or cooked	$33 281	Hong Kong	High income economies

[3] The highest export opportunities per tariff heading in each industry. This table represents the results from the Decision Support Model (DSM) consisting of the product and its tariff heading, products' export value (US$), countries the product is exported to, and finally the last column states which country-income classification the country falls under. The export value is listed in US$ as this is the exchange rate that is used to convert currencies from countries around the world.

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
040700 - Bird eggs, in shell, fresh, preserved or cooked	$15 234	United Kingdom	High income economies
040700 - Bird eggs, in shell, fresh, preserved or cooked	$15 026	Russia	Upper-middle income economies
070200 - Tomatoes, fresh or chilled	$314 724	France	High income economies
070200 - Tomatoes, fresh or chilled	$133 539	Canada	High income economies
070200 - Tomatoes, fresh or chilled	$31 974	Romania	Upper-middle income economies
080290 - Nuts edible, fresh or dried	$22 436	Germany	High income economies
080290 - Nuts edible, fresh or dried	$21 438	Italy	High income economies
080290 - Nuts edible, fresh or dried	$18 578	Hong Kong	High income economies
080510 - Oranges, fresh or dried	$75 032	Russia	Upper-middle income economies
080510 - Oranges, fresh or dried	$61 923	Netherlands	High income economies
080510 - Oranges, fresh or dried	$58 790	Saudi Arabia	High income economies
080540 - Grapefruit, fresh or dried	$98 960	Japan	High income economies
080540 - Grapefruit, fresh or dried	$20 453	Netherlands	High income economies
080540 - Grapefruit, fresh or dried	$15 550	France	High income economies
090240 - Tea, black (fermented or partly) in packages > 3 kg	$63 649	United Kingdom	High income economies
090240 - Tea, black (fermented or partly) in packages > 3 kg	$37 290	Japan	High income economies
090240 - Tea, black (fermented or partly) in packages > 3 kg	$20 840	United States	High income economies
100590 - Maize except seed corn	$597 636	Spain	High income economies
100590 - Maize except seed corn	$230 704	Saudi Arabia	High income economies
100590 - Maize except seed corn	$160 011	France	High income economies
110220 - Maize (corn) flour	$1 237	United Kingdom	High income economies
110220 - Maize (corn) flour	$893	Spain	High income economies
110220 - Maize (corn) flour	$358	Portugal	High income economies
110313 - Maize (corn) groats or meal	$8 263	Israel	High income economies
110313 - Maize (corn) groats or meal	$2 814	Malaysia	Upper-middle income economies
110313 - Maize (corn) groats or meal	$989	Jordan	Lower-middle income economies
110423 - Maize (corn), hulled, pearled, sliced or kibbled	$4 839	Germany	High income economies
110423 - Maize (corn), hulled, pearled, sliced or kibbled	$2 874	Poland	High income economies
110423 - Maize (corn), hulled, pearled, sliced or kibbled	$1 925	Malaysia	Upper-middle income economies
120991 - Seed, vegetable, for sowing	$24 129	United States	High income economies
120991 - Seed, vegetable, for sowing	$14 209	Turkey	Upper-middle income economies
120991 - Seed, vegetable, for sowing	$13 963	Netherlands	High income economies
170111 - Raw sugar, cane	$221 934	Malaysia	Upper-middle income

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
			economies
170111 - Raw sugar, cane	$217 573	Japan	High income economies
170111 - Raw sugar, cane	$210 003	Indonesia	Lower-middle income economies
170199 - Refined sugar, in solid form, pure sucrose	$136 728	Indonesia	Lower-middle income economies
170199 - Refined sugar, in solid form, pure sucrose	$63 516	China	Lower-middle income economies
170199 - Refined sugar, in solid form, pure sucrose	$60 764	Italy	High income economies
170410 - Chewing gum containing sugar, except medicinal	$6 316	United Kingdom	High income economies
170410 - Chewing gum containing sugar, except medicinal	$2 956	Slovakia	High income economies
170410 - Chewing gum containing sugar, except medicinal	$2 434	United Arab Emirates	High income economies
180690 - Chocolate/cocoa food preparations	$62 942	United States	High income economies
180690 - Chocolate/cocoa food preparations	$30 062	United Kingdom	High income economies
180690 - Chocolate/cocoa food preparations	$6 103	Brazil	Upper-middle income economies
200830 - Citrus fruits, otherwise prepared or preserved	$44 834	Germany	High income economies
200830 - Citrus fruits, otherwise prepared or preserved	$18 582	China	Lower-middle income economies
200830 - Citrus fruits, otherwise prepared or preserved	$9 051	United Kingdom	High income economies
200980 - Single fruit, vegetable juice, not fermented or spirited	$10 679	Saudi Arabia	High income economies
200980 - Single fruit, vegetable juice, not fermented or spirited	$8 504	Canada	High income economies
200980 - Single fruit, vegetable juice, not fermented or spirited	$3 944	Malaysia	Upper-middle income economies
200990 - Mixtures of juices not fermented or spirited	$10 030	United Arab Emirates	High income economies
200990 - Mixtures of juices not fermented or spirited	$8 446	Saudi Arabia	High income economies
200990 - Mixtures of juices not fermented or spirited	$3 637	New Zealand	High income economies
210410 - Soups and broths and preparations thereof	$44 111	United States	High income economies
210410 - Soups and broths and preparations thereof	$39 369	Germany	High income economies
210410 - Soups and broths and preparations thereof	$13 787	Japan	High income economies
210690 - Food preparations	$119 514	Australia	High income economies
210690 - Food preparations	$114 387	Japan	High income economies
210690 - Food preparations	$70 816	Germany	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
230400 - Soybean oil-cake and other solid residues	$528 768	France	High income economies
230400 - Soybean oil-cake and other solid residues	$384 968	Netherlands	High income economies
230400 - Soybean oil-cake and other solid residues	$336 092	Germany	High income economies
252329 - Portland cement, other than white cement	$240 768	United States	High income economies
252329 - Portland cement, other than white cement	$103 005	Kazakhstan	Upper-middle income economies
252329 - Portland cement, other than white cement	$57 640	Russia	Upper-middle income economies
260300 - Copper ores and concentrates	$2 172 167	Japan	High income economies
260300 - Copper ores and concentrates	$1 473 534	China	Lower-middle income economies
260300 - Copper ores and concentrates	$873 873	India	Lower-middle income economies
261000 - Chromium ores and concentrates	$398 148	China	Lower-middle income economies
261000 - Chromium ores and concentrates	$24 380	Japan	High income economies
261000 - Chromium ores and concentrates	$23 098	Germany	High income economies
270112 - Bituminous coal, not agglomerated	$4 542 522	Japan	High income economies
270112 - Bituminous coal, not agglomerated	$775 304	Netherlands	High income economies
270112 - Bituminous coal, not agglomerated	$667 899	United Kingdom	High income economies
270119 - Coal except anthracite or bituminous, not agglomerate	$1 543 164	India	Lower-middle income economies
270119 - Coal except anthracite or bituminous, not agglomerate	$595 850	Brazil	Upper-middle income economies
270119 - Coal except anthracite or bituminous, not agglomerate	$480 918	Israel	High income economies
271320 - Petroleum bitumen	$42 768	Norway	High income economies
271320 - Petroleum bitumen	$38 711	Switzerland	High income economies
271320 - Petroleum bitumen	$20 434	Finland	High income economies
271500 - Bituminous mix, mastic from asphalt, bitumen/tar/pitch	$8 773	China	Lower-middle income economies
271500 - Bituminous mix, mastic from asphalt, bitumen/tar/pitch	$8 078	Panama	Upper-middle income economies
271500 - Bituminous mix, mastic from asphalt, bitumen/tar/pitch	$5 388	New Zealand	High income economies
282090 - Manganese oxides other than manganese dioxide	$2 405	Belgium	High income economies
282090 - Manganese oxides other than manganese dioxide	$2 003	Japan	High income economies
282090 - Manganese oxides other than manganese dioxide	$1 448	United Kingdom	High income economies
320810 - Polyester based paints, varnishes, non-aqueous medium	$47 019	Russia	Upper-middle income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
320810 - Polyester based paints, varnishes, non-aqueous medium	$20 630	China	Lower-middle income economies
320810 - Polyester based paints, varnishes, non-aqueous medium	$15 210	Germany	High income economies
320910 - Acrylic & vinyl polymer based paint, varnish, in water	$24 920	Norway	High income economies
320910 - Acrylic & vinyl polymer based paint, varnish, in water	$16 874	United States	High income economies
320910 - Acrylic & vinyl polymer based paint, varnish, in water	$14 381	Russia	Upper-middle income economies
320990 - Polymer based paints & varnishes, aqueous medium	$31 394	United States	High income economies
320990 - Polymer based paints & varnishes, aqueous medium	$17 669	China	Lower-middle income economies
320990 - Polymer based paints & varnishes, aqueous medium	$14 513	Turkey	Upper-middle income economies
330690 - Oral & dental hygiene preparations, except dentifrice	$27 537	United States	High income economies
330690 - Oral & dental hygiene preparations, except dentifrice	$18 034	Japan	High income economies
330690 - Oral & dental hygiene preparations, except dentifrice	$15 610	Germany	High income economies
340119 - Soaps for purposes other than toilet soap, solid	$29 660	United States	High income economies
340119 - Soaps for purposes other than toilet soap, solid	$11 933	Japan	High income economies
340119 - Soaps for purposes other than toilet soap, solid	$6 472	Spain	High income economies
340220 - Washing and cleaning preparations, retail	$97 099	United States	High income economies
340220 - Washing and cleaning preparations, retail	$24 802	Germany	High income economies
340220 - Washing and cleaning preparations, retail	$24 474	Netherlands	High income economies
340290 - Organic surfactant washing, cleaning preparations	$31 116	Japan	High income economies
340290 - Organic surfactant washing, cleaning preparations	$28 033	United States	High income economies
340290 - Organic surfactant washing, cleaning preparations	$26 019	China	Lower-middle income economies
360500 - Matches	$1 742	United States	High income economies
360500 - Matches	$1 711	France	High income economies
360500 - Matches	$1 389	Ghana	Low-income economies
382200 - Composite diagnostic or laboratory reagents	$657 752	France	High income economies
382200 - Composite diagnostic or laboratory reagents	$543 000	Germany	High income economies
382200 - Composite diagnostic or laboratory reagents	$236 512	United Kingdom	High income economies
391723 - Tube, pipe or hose, rigid, of polyvinyl chloride	$108 797	France	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
391723 - Tube, pipe or hose, rigid, of polyvinyl chloride	$4 283	Belarus	Upper-middle income economies
391723 - Tube, pipe or hose, rigid, of polyvinyl chloride	$4 273	Singapore	High income economies
391731 - Plastic tube, pipe or hose, flexible, mbp > 27.6 MPa	$10 557	United States	High income economies
391731 - Plastic tube, pipe or hose, flexible, mbp > 27.6 MPa	$10 018	China	Lower-middle income economies
391731 - Plastic tube, pipe or hose, flexible, mbp > 27.6 MPa	$9 098	Hong Kong	High income economies
391739 - Plastic tube, pipe or hose, flexible	$41 340	United States	High income economies
391739 - Plastic tube, pipe or hose, flexible	$18 122	Switzerland	High income economies
391739 - Plastic tube, pipe or hose, flexible	$17 282	China	Lower-middle income economies
391740 - Fittings for plastic tube, pipe or hose	$117 934	Germany	High income economies
391740 - Fittings for plastic tube, pipe or hose	$39 159	United States	High income economies
391740 - Fittings for plastic tube, pipe or hose	$14 558	China	Lower-middle income economies
392010 - Sheet/film not cellular/rein polymers of ethylene	$136 359	United States	High income economies
392010 - Sheet/film not cellular/rein polymers of ethylene	$83 390	China	Lower-middle income economies
392010 - Sheet/film not cellular/rein polymers of ethylene	$23 617	Germany	High income economies
392020 - Sheet/film not cellular/rein polymers of propylene	$63 880	United States	High income economies
392020 - Sheet/film not cellular/rein polymers of propylene	$55 962	China	Lower-middle income economies
392020 - Sheet/film not cellular/rein polymers of propylene	$20 730	Germany	High income economies
392330 - Plastic carboys, bottles and flasks, etc	$113 856	United States	High income economies
392330 - Plastic carboys, bottles and flasks, etc	$111 660	Italy	High income economies
392330 - Plastic carboys, bottles and flasks, etc	$33 320	Switzerland	High income economies
392350 - Plastic stoppers, lids, caps and other closures	$95 240	United States	High income economies
392350 - Plastic stoppers, lids, caps and other closures	$43 062	Belgium	High income economies
392350 - Plastic stoppers, lids, caps and other closures	$32 181	Germany	High income economies
392690 - Plastic articles	$649 807	United States	High income economies
392690 - Plastic articles	$580 396	Canada	High income economies
392690 - Plastic articles	$314 853	China	Lower-middle income economies
401120 - Pneumatic tyres new of rubber for buses or lorries	$547 714	United States	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
401120 - Pneumatic tyres new of rubber for buses or lorries	$228 443	Canada	High income economies
401120 - Pneumatic tyres new of rubber for buses or lorries	$121 693	Belgium	High income economies
420100 - Saddlery and harness, of any material	$75 042	United States	High income economies
420100 - Saddlery and harness, of any material	$21 322	United Kingdom	High income economies
420100 - Saddlery and harness, of any material	$17 220	Germany	High income economies
420219 - Trunks, suitcases and similar containers, outer	$10 076	France	High income economies
420219 - Trunks, suitcases and similar containers, outer	$7 521	Belgium	High income economies
420219 - Trunks, suitcases and similar containers, outer	$7 406	Spain	High income economies
420221 - Handbags with outer surface of leather	$600 214	United States	High income economies
420221 - Handbags with outer surface of leather	$263 885	Hong Kong	High income economies
420221 - Handbags with outer surface of leather	$81 455	Switzerland	High income economies
420229 - Handbags, of vulcanised fibre or paperboard	$16 304	Italy	High income economies
420229 - Handbags, of vulcanised fibre or paperboard	$11 573	Singapore	High income economies
420229 - Handbags, of vulcanised fibre or paperboard	$11 025	Germany	High income economies
420292 - Containers, outer surface plastic or textile	$229 007	Spain	High income economies
420292 - Containers, outer surface plastic or textile	$226 885	United Kingdom	High income economies
420292 - Containers, outer surface plastic or textile	$220 058	Italy	High income economies
420299 - Gun, musical instrument, camera, etc cases	$33 766	United States	High income economies
420299 - Gun, musical instrument, camera, etc cases	$20 088	Spain	High income economies
420299 - Gun, musical instrument, camera, etc cases	$17 204	United Kingdom	High income economies
420310 - Articles of apparel of leather or composition leather	$135 241	Germany	High income economies
420310 - Articles of apparel of leather or composition leather	$49 460	Italy	High income economies
420310 - Articles of apparel of leather or composition leather	$46 068	Japan	High income economies
420329 - Leather, composition gloves & mittens except sports	$64 790	Germany	High income economies
420329 - Leather, composition gloves & mittens except sports	$29 502	Italy	High income economies
420329 - Leather, composition gloves & mittens except sports	$28 099	United Kingdom	High income economies
420330 - Belts and bandoliers of leather or composition leather	$181 649	United States	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
420330 - Belts and bandoliers of leather or composition leather	$92 076	Japan	High income economies
420330 - Belts and bandoliers of leather or composition leather	$65 426	Hong Kong	High income economies
420500 - Articles of leather and composition leather	$29 840	Slovenia	High income economies
420500 - Articles of leather and composition leather	$25 945	United States	High income economies
420500 - Articles of leather and composition leather	$22 988	China	Lower-middle income economies
440130 - Sawdust, wood waste or scrap	$53 020	Belgium	High income economies
440130 - Sawdust, wood waste or scrap	$22 819	Netherlands	High income economies
440130 - Sawdust, wood waste or scrap	$11 571	Sweden	High income economies
440310 - Poles, treated or painted with preservatives	$3 974	Oman	High income economies
440310 - Poles, treated or painted with preservatives	$2 457	Qatar	High income economies
440310 - Poles, treated or painted with preservatives	$1 781	Vietnam	Lower-middle income economies
440710 - Lumber, coniferous (softwood) thickness < 6 mm	$387 334	Japan	High income economies
440710 - Lumber, coniferous (softwood) thickness < 6 mm	$318 731	Egypt	Lower-middle income economies
440710 - Lumber, coniferous (softwood) thickness < 6 mm	$206 634	United Kingdom	High income economies
440799 - Lumber, non-coniferous	$118 235	China	Lower-middle income economies
440799 - Lumber, non-coniferous	$76 679	United States	High income economies
440799 - Lumber, non-coniferous	$36 359	Vietnam	Lower-middle income economies
441820 - Doors, frames and thresholds, of wood	$151 291	United States	High income economies
441820 - Doors, frames and thresholds, of wood	$77 032	Norway	High income economies
441820 - Doors, frames and thresholds, of wood	$47 673	United Kingdom	High income economies
481910 - Cartons, boxes & cases, of corrugated paper or board	$99 395	United States	High income economies
481910 - Cartons, boxes & cases, of corrugated paper or board	$59 933	Switzerland	High income economies
481910 - Cartons, boxes & cases, of corrugated paper or board	$45 782	Germany	High income economies
481920 - Cartons, boxes & cases, folding, non-corrugated paper	$224 671	United States	High income economies
481920 - Cartons, boxes & cases, folding, non-corrugated paper	$55 776	Russia	Upper-middle income economies
481920 - Cartons, boxes & cases, folding, non-corrugated paper	$41 156	Switzerland	High income economies
482110 - Paper labels of all kinds, printed	$68 952	United States	High income economies
482110 - Paper labels of all kinds, printed	$48 879	China	Lower-middle income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
482110 - Paper labels of all kinds, printed	$7 078	Germany	High income economies
490199 - Printed reading books, except dictionaries, etc.	$340 091	United States	High income economies
490199 - Printed reading books, except dictionaries, etc.	$294 807	Switzerland	High income economies
490199 - Printed reading books, except dictionaries, etc.	$239 452	United Kingdom	High income economies
491199 - Printed matter	$88 867	United States	High income economies
491199 - Printed matter	$45 764	Italy	High income economies
491199 - Printed matter	$26 789	China	Lower-middle income economies
540490 - Strip, straw, etc. synth textile material,< 5 mm thick	$7 628	France	High income economies
540490 - Strip, straw, etc. synth textile material,< 5 mm thick	$6 337	United States	High income economies
540490 - Strip, straw, etc. synth textile material,< 5 mm thick	$5 262	Turkey	Upper-middle income economies
560110 - Sanitary towels, diapers and similar articles	$12 237	United States	High income economies
560110 - Sanitary towels, diapers and similar articles	$12 013	Israel	High income economies
560110 - Sanitary towels, diapers and similar articles	$10 830	Germany	High income economies
560900 - Articles of yarn strip, twine, cordage or rope	$32 381	United States	High income economies
560900 - Articles of yarn strip, twine, cordage or rope	$5 232	Netherlands	High income economies
560900 - Articles of yarn strip, twine, cordage or rope	$4 714	Japan	High income economies
570390 - Carpets of materials tufted	$10 824	United Kingdom	High income economies
570390 - Carpets of materials tufted	$7 083	Germany	High income economies
570390 - Carpets of materials tufted	$5 833	Spain	High income economies
591190 - Textile products and articles for technical uses	$39 508	United States	High income economies
591190 - Textile products and articles for technical uses	$30 612	China	Lower-middle income economies
591190 - Textile products and articles for technical uses	$13 397	Romania	Upper-middle income economies
611490 - Garments of materials, knit	$10 127	Singapore	High income economies
611490 - Garments of materials, knit	$6 107	Canada	High income economies
611490 - Garments of materials, knit	$1 771	Denmark	High income economies
620339 – Men's, boys' jackets & blazers, material not knit	$15 539	United States	High income economies
620339 – Men's, boys' jackets & blazers, material not knit	$7 114	Spain	High income economies
620339 – Men's, boys' jackets & blazers, material not knit	$6 883	United Kingdom	High income economies
620349 – Men's, boys' trousers & shorts, material not knit	$22 166	United Kingdom	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
620349 – Men's, boys' trousers & shorts, material not knit	$16 105	France	High income economies
620349 – Men's, boys' trousers & shorts, material not knit	$9 962	Spain	High income economies
620469 – Women's, girls' trousers, shorts, material not knit	$96 535	United Kingdom	High income economies
620469 – Women's, girls' trousers, shorts, material not knit	$39 855	France	High income economies
620469 – Women's, girls' trousers, shorts, material not knit	$29 153	Spain	High income economies
620590 – Men's, boys' shirts of material not knit	$13 806	United Kingdom	High income economies
620590 – Men's, boys' shirts of material not knit	$7 695	France	High income economies
620590 – Men's, boys' shirts of material not knit	$7 325	Germany	High income economies
640110 - Waterproof footwear (Wellingtons, etc.), metal toe-cap	$4 575	United States	High income economies
640110 - Waterproof footwear (Wellingtons, etc.), metal toe-cap	$3 461	Ireland	High income economies
640110 - Waterproof footwear (Wellingtons, etc.), metal toe-cap	$2 795	Canada	High income economies
640192 - Waterproof footwear (Wellingtons) no toe-cap, over ankle	$32 178	United Kingdom	High income economies
640192 - Waterproof footwear (Wellingtons) no toe-cap, over ankle	$20 776	Germany	High income economies
640192 - Waterproof footwear (Wellingtons) no toe-cap, over ankle	$10 881	Denmark	High income economies
640199 - Waterproof footwear (Wellingtons) no toe-cap	$3 654	Saudi Arabia	High income economies
640199 - Waterproof footwear (Wellingtons) no toe-cap	$1 418	United Kingdom	High income economies
640199 - Waterproof footwear (Wellingtons) no toe-cap	$1 339	France	High income economies
640299 - Footwear, outer soles/uppers of rubber or plastic	$332 246	Germany	High income economies
640299 - Footwear, outer soles/uppers of rubber or plastic	$285 630	France	High income economies
640299 - Footwear, outer soles/uppers of rubber or plastic	$257 670	United Kingdom	High income economies
640340 - Footwear, uppers of leather with metal toe-cap	$77 568	Italy	High income economies
640340 - Footwear, uppers of leather with metal toe-cap	$62 423	United Kingdom	High income economies
640340 - Footwear, uppers of leather with metal toe-cap	$35 212	France	High income economies
640399 - Footwear, sole rubber, plastics uppers of leather	$237 457	United Kingdom	High income economies
640399 - Footwear, sole rubber, plastics uppers of leather	$160 182	Germany	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
640399 - Footwear, sole rubber, plastics uppers of leather	$140 531	Belgium	High income economies
640411 - Sports footwear, sole rubber or plastic, upper textile	$116 243	France	High income economies
640411 - Sports footwear, sole rubber or plastic, upper textile	$104 240	Germany	High income economies
640411 - Sports footwear, sole rubber or plastic, upper textile	$70 730	Italy	High income economies
640590 - Footwear	$14 491	Singapore	High income economies
640590 - Footwear	$10 146	Canada	High income economies
640590 - Footwear	$5 791	Netherlands	High income economies
650610 - Safety headgear	$98 145	United States	High income economies
650610 - Safety headgear	$30 714	Germany	High income economies
650610 - Safety headgear	$21 746	Canada	High income economies
650691 - Headgear of rubber or plastic	$4 384	Italy	High income economies
650691 - Headgear of rubber or plastic	$1 854	Germany	High income economies
650691 - Headgear of rubber or plastic	$1 767	France	High income economies
680690 - Mineral heat or sound insulating materials & articles	$19 890	Germany	High income economies
680690 - Mineral heat or sound insulating materials & articles	$14 309	United States	High income economies
680690 - Mineral heat or sound insulating materials & articles	$5 070	United Kingdom	High income economies
680919 - Plaster boards, etc. not ornamental, reinforced	$10 626	Germany	High income economies
680919 - Plaster boards, etc. not ornamental, reinforced	$2 363	Singapore	High income economies
680919 - Plaster boards, etc. not ornamental, reinforced	$1 638	Saudi Arabia	High income economies
690290 - Refractory bricks, etc.	$14 070	United States	High income economies
690290 - Refractory bricks, etc.	$10 449	Saudi Arabia	High income economies
690290 - Refractory bricks, etc.	$9 797	China	Lower-middle income economies
690890 - Glazed ceramic flags, tiles wider than 7 cm	$311 887	United States	High income economies
690890 - Glazed ceramic flags, tiles wider than 7 cm	$55 351	Spain	High income economies
690890 - Glazed ceramic flags, tiles wider than 7 cm	$42 991	United Kingdom	High income economies
691090 - Ceramic bathroom and kitchen sanitary items, not porcelain	$34 185	United Kingdom	High income economies
691090 - Ceramic bathroom and kitchen sanitary items, not porcelain	$18 789	Japan	High income economies
691090 - Ceramic bathroom and kitchen sanitary items, not porcelain	$16 938	France	High income economies
700510 - Float glass, etc. sheets, absorbent or reflecting layer	$14 034	Italy	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
700510 - Float glass, etc. sheets, absorbent or reflecting layer	$9 426	Germany	High income economies
700510 - Float glass, etc. sheets, absorbent or reflecting layer	$7 497	Netherlands	High income economies
700729 - Safety glass, laminated, non vehicle use	$24 358	Switzerland	High income economies
700729 - Safety glass, laminated, non vehicle use	$14 620	Germany	High income economies
700729 - Safety glass, laminated, non vehicle use	$12 521	Netherlands	High income economies
700800 - Multiple-walled insulating units of glass	$71 553	United States	High income economies
700800 - Multiple-walled insulating units of glass	$33 938	Switzerland	High income economies
700800 - Multiple-walled insulating units of glass	$8 255	Sweden	High income economies
701090 - Glass containers for packing or conveyance goods	$163 219	United States	High income economies
701090 - Glass containers for packing or conveyance goods	$54 968	Canada	High income economies
701090 - Glass containers for packing or conveyance goods	$24 328	Kazakhstan	Upper-middle income economies
701990 - Glass fibres, glass wool and articles thereof	$40 044	China	Lower-middle income economies
701990 - Glass fibres, glass wool and articles thereof	$39 104	United States	High income economies
701990 - Glass fibres, glass wool and articles thereof	$7 665	United Kingdom	High income economies
720241 - Ferro-chromium, >4% carbon	$626 822	China	Lower-middle income economies
720241 - Ferro-chromium, >4% carbon	$421 050	Japan	High income economies
720241 - Ferro-chromium, >4% carbon	$295 764	Belgium	High income economies
720837 - Flat rid prod/coils<4.75	$97 941	Turkey	Upper-middle income economies
720837 - Flat rid prod/coils<4.75	$76 118	Belgium	High income economies
720837 - Flat rid prod/coils<4.75	$72 426	Italy	High income economies
721912 - Hot rolled stainless steel coil, w >600mm, t 4.75-10m	$95 643	China	Lower-middle income economies
721912 - Hot rolled stainless steel coil, w >600mm, t 4.75-10m	$74 646	Italy	High income economies
721912 - Hot rolled stainless steel coil, w >600mm, t 4.75-10m	$71 070	United States	High income economies
721913 - Hot rolled stainless steel coil, w >600mm, t 3-4.75mm	$176 787	Thailand	Lower-middle income economies
721913 - Hot rolled stainless steel coil, w >600mm, t 3-4.75mm	$157 399	China	Lower-middle income economies
721913 - Hot rolled stainless steel coil, w >600mm, t 3-4.75mm	$56 839	Germany	High income economies
721933 - Cold rolled stainless steel, w >600mm, t 1.0-3.0 mm	$132 384	Italy	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
721933 - Cold rolled stainless steel, w >600mm, t 1.0-3.0 mm	$114 044	Germany	High income economies
721933 - Cold rolled stainless steel, w >600mm, t 1.0-3.0 mm	$98 675	United States	High income economies
721934 - Cold rolled stainless steel, w >600mm, t 0.5-1.0 mm	$198 047	China	Lower-middle income economies
721934 - Cold rolled stainless steel, w >600mm, t 0.5-1.0 mm	$133 952	Germany	High income economies
721934 - Cold rolled stainless steel, w >600mm, t 0.5-1.0 mm	$120 861	Italy	High income economies
722860 - Bar/rod, alloy steel	$41 485	United Arab Emirates	High income economies
722860 - Bar/rod, alloy steel	$7 593	China	Lower-middle income economies
722860 - Bar/rod, alloy steel	$6 555	Saudi Arabia	High income economies
730890 - Structures and parts of structures, iron or steel	$668 626	Japan	High income economies
730890 - Structures and parts of structures, iron or steel	$432 247	United States	High income economies
730890 - Structures and parts of structures, iron or steel	$154 023	Switzerland	High income economies
761699 - Articles of aluminium	$237 084	United States	High income economies
761699 - Articles of aluminium	$155 865	Singapore	High income economies
761699 - Articles of aluminium	$59 598	Germany	High income economies
811100 - Manganese, articles thereof, waste or scrap	$29 642	Austria	High income economies
811100 - Manganese, articles thereof, waste or scrap	$10 887	France	High income economies
811100 - Manganese, articles thereof, waste or scrap	$9 941	Canada	High income economies
841381 - Pumps	$67 559	Canada	High income economies
841381 - Pumps	$48 331	Saudi Arabia	High income economies
841381 - Pumps	$47 628	United States	High income economies
841459 - Electric fans, motor > 125 watts	$141 412	United States	High income economies
841459 - Electric fans, motor > 125 watts	$82 696	China	Lower-middle income economies
841459 - Electric fans, motor > 125 watts	$66 755	Canada	High income economies
842619 - Transporter or bridge cranes	$60 405	Germany	High income economies
842619 - Transporter or bridge cranes	$39 533	United States	High income economies
842619 - Transporter or bridge cranes	$38 457	France	High income economies
842920 - Graders and levellers, self-propelled	$105 256	United States	High income economies
842920 - Graders and levellers, self-propelled	$42 863	Australia	High income economies
842920 - Graders and levellers, self-propelled	$24 717	Saudi Arabia	High income economies
842951 – Front-end shovel loaders	$178 808	United States	High income economies
842951 – Front-end shovel loaders	$91 875	Italy	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
842951 – Front-end shovel loaders	$72 664	Australia	High income economies
842959 - Earth moving/road making equipment, self-propelled ne	$226 287	United Kingdom	High income economies
842959 - Earth moving/road making equipment, self-propelled ne	$127 896	Turkey	Upper-middle income economies
842959 - Earth moving/road making equipment, self-propelled ne	$56 846	India	Lower-middle income economies
843149 - Parts of cranes, work-trucks, shovels, construe machine	$336 388	China	Lower-middle income economies
843149 - Parts of cranes, work-trucks, shovels, construe machine	$326 471	United States	High income economies
843149 - Parts of cranes, work-trucks, shovels, construe machine	$216 765	Canada	High income economies
847330 - Parts and accessories of data processing equipment ne	$4 352 145	United States	High income economies
847330 - Parts and accessories of data processing equipment ne	$3 575 164	Hong Kong	High income economies
847330 - Parts and accessories of data processing equipment ne	$3 367 270	China	Lower-middle income economies
848180 - Taps, cocks, valves and similar appliances	$704 374	United States	High income economies
848180 - Taps, cocks, valves and similar appliances	$315 281	Canada	High income economies
848180 - Taps, cocks, valves and similar appliances	$230 247	China	Lower-middle income economies
853690 - Electrical switch, protector, connecter for < 1kV	$1 212 758	Hong Kong	High income economies
853690 - Electrical switch, protector, connecter for < 1kV	$867 308	China	Lower-middle income economies
853690 - Electrical switch, protector, connecter for < 1kV	$223 112	Japan	High income economies
870190 - Wheeled tractors	$222 886	Canada	High income economies
870190 - Wheeled tractors	$157 240	Belgium	High income economies
870190 - Wheeled tractors	$99 106	Germany	High income economies
870290 - Buses except diesel powered	$69 490	Saudi Arabia	High income economies
870290 - Buses except diesel powered	$26 561	Kazakhstan	Upper-middle income economies
870290 - Buses except diesel powered	$9 296	Qatar	High income economies
870323 - Automobiles, spark ignition engine of 1500-3000 cc	$10 704 206	United States	High income economies
870323 - Automobiles, spark ignition engine of 1500-3000 cc	$3 381 686	Canada	High income economies
870323 - Automobiles, spark ignition engine of 1500-3000 cc	$1 380 651	Australia	High income economies
870421 - Diesel powered trucks weighing < 5 tonnes	$688 769	Australia	High income economies
870421 - Diesel powered trucks weighing < 5 tonnes	$430 100	Italy	High income economies
870421 - Diesel powered trucks weighing < 5 tonnes	$297 029	France	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
870422 - Diesel powered trucks weighing 5-20 tonnes	$1 104 116	United States	High income economies
870422 - Diesel powered trucks weighing 5-20 tonnes	$33 311	United Kingdom	High income economies
870422 - Diesel powered trucks weighing 5-20 tonnes	$29 349	Israel	High income economies
870423 - Diesel powered trucks weighing > 20 tonnes	$124 304	Kazakhstan	Upper-middle income economies
870423 - Diesel powered trucks weighing > 20 tonnes	$73 304	Australia	High income economies
870423 - Diesel powered trucks weighing > 20 tonnes	$73 037	Saudi Arabia	High income economies
870490 - Trucks	$20 420	Singapore	High income economies
870490 - Trucks	$9 637	Australia	High income economies
870490 - Trucks	$3 798	Ghana	Low-income economies
870850 - Drive axles with differential for motor vehicles	$298 673	United States	High income economies
870850 - Drive axles with differential for motor vehicles	$40 338	Russia	Upper-middle income economies
870850 - Drive axles with differential for motor vehicles	$38 436	United Kingdom	High income economies
870899 - Motor vehicle parts	$730 147	China	Lower-middle income economies
870899 - Motor vehicle parts	$253 599	Malaysia	Upper-middle income economies
870899 - Motor vehicle parts	$181 492	United Kingdom	High income economies
871639 - Trailers for the transport of goods	$247 845	United States	High income economies
871639 - Trailers for the transport of goods	$15 798	Germany	High income economies
871639 - Trailers for the transport of goods	$9 510	Sweden	High income economies
900691 - Parts and accessories for photographic cameras	$116 818	Hong Kong	High income economies
900691 - Parts and accessories for photographic cameras	$55 117	China	Lower-middle income economies
900691 - Parts and accessories for photographic cameras	$22 031	Thailand	Lower-middle income economies
902830 - Electricity supply, production and calibrating meters	$18 642	France	High income economies
902830 - Electricity supply, production and calibrating meters	$14 576	Sweden	High income economies
902830 - Electricity supply, production and calibrating meters	$12 838	Ghana	Low-income economies
903180 - Measuring or checking equipment	$289 342	China	Lower-middle income economies
903180 - Measuring or checking equipment	$188 007	United States	High income economies
903180 - Measuring or checking equipment	$132 604	Germany	High income economies
903289 - Automatic regulating/controlling equipment	$584 931	United States	High income economies

The highest export opportunities per tariff heading in each industry[3]

Tariff heading & description	Export value (US$ thousand)	Country	Country-income classification
903289 - Automatic regulating/controlling equipment	$200 967	China	Lower-middle income economies
903289 - Automatic regulating/controlling equipment	$109 261	Japan	High income economies
940330 - Office furniture, wooden	$350 766	United States	High income economies
940330 - Office furniture, wooden	$38 137	Canada	High income economies
940330 - Office furniture, wooden	$27 050	Switzerland	High income economies
940360 - Furniture, wooden	$863 444	United States	High income economies
940360 - Furniture, wooden	$227 296	United Kingdom	High income economies
940360 - Furniture, wooden	$223 003	Japan	High income economies
940370 - Furniture, plastic	$154 487	United States	High income economies
940370 - Furniture, plastic	$44 094	Canada	High income economies
940370 - Furniture, plastic	$25 513	Spain	High income economies
940540 - Electric lamps, lighting fittings	$203 630	Germany	High income economies
940540 - Electric lamps, lighting fittings	$194 893	France	High income economies
940540 - Electric lamps, lighting fittings	$163 832	Canada	High income economies
940600 - Prefabricated buildings	$106 936	United States	High income economies
940600 - Prefabricated buildings	$91 587	Italy	High income economies
940600 - Prefabricated buildings	$66 353	Norway	High income economies
960810 - Ball point pens	$181 188	United States	High income economies
960810 - Ball point pens	$32 743	Hong Kong	High income economies
960810 - Ball point pens	$30 923	Germany	High income economies

Source of data: Author's own calculations based on DSM results