



**University of Fort Hare**  
*Together in Excellence*

**The Impact of Immigration on the Labour Market: Evidence  
from South Africa.**

**BY**

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A dissertation submitted in fulfillment of the requirements for the  
degree of Master of Commerce in Economics.

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I, the undersigned Nomazulu Sibanda, hereby declare that this dissertation is my own original work and that it has not been presented at any other University for a similar or any other degree award.

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Date

## **ACKNOWLEDGEMENTS**

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## **DEDICATIONS**

This dissertation is dedicated to Miss Mbali Dube for her outpouring love and support.

## **Acronyms and Abbreviations**

DTI - Department of Industry and Trade

GDP -Gross Domestic Product

ASGISA-Accelerated and Shared Growth Initiative for South Africa

OLS- Ordinary Least Squares

SARB- South African Reserve Bank

ECT-Error Correction Term

ECM- Error Correction Model

DW-Durbin Watson

SE-Standard Error

ILO-International Labour Organisation

## **Abstract**

The impact of immigrants on the labour market in the South African context has always been a long standing issue with both government and natives' fearing for the latter's displacement effect, pressure on wages and resources. Migrants are blamed for poor labour market conditions of a host country. Literature reviewed from Africa and elsewhere shows that migrants have negative outcomes on the host country's labour market. For this study an Error Correction Model on time series data from 1980-2006 has been estimated. The study estimated two models that is the unemployment and the wages models. The variables used for estimation are immigration, inflation and the Gross Domestic Product. The study surprisingly found a positive impact of immigrants on wages but the effect on employment was negative and significant. It is important to note here that the calculated impact is only for the documented immigrants the impact the illegal ones is not known.

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# CHAPTER 1

## 1.1 Introduction

Labour migration in the Southern African Development Community (SADC) region dates back to a period before colonization of Africa that is, 150 years ago (Crush, 1999). South Africa has remained as one of the destinations of labour migrants since colonialism, drawing the largest pool immigrants from the African continent. Flow of immigrants to South Africa has been on the increase. Immigrants include students, those who enter the country for business purposes (investors, entrepreneurs, self-employed) and those who come to work (skilled and unskilled). The largest numbers of immigrants to South Africa are from the African continent. More males than women are reported to be entering the country. Labour migration has played an important role in the development of many economies including South Africa (UNFPA, 2005).

According to the ILO, (2000) flows of undocumented immigrants into South Africa have increased markedly in the post-apartheid era; their precise number is a matter of controversy, with estimates ranging from 3 to 8 million. Most of these immigrants are from neighboring Mozambique, Zimbabwe, Swaziland and Lesotho.

A number of factors that drive migration have been put forward and these take the form of push and pull factors. Pull factors include higher earnings in the destination country, purchasing power parity which bring income gains when working in one country than the other and finally tax and welfare differences between countries. Large numbers of African nationals flock into South Africa to earn a decent living. South Africa has a huge economy by African standards. For example, 67% of Southern African Development Community (SADC) Gross Domestic Product (GDP) resides in South Africa. Historically, the mining and agricultural sectors in South Africa were dependant on migrant labour from Southern Africa (Maharaj, 2004).

On the other hand, poor living conditions in home country, high unemployment rates, violence and human rights abuse, drought, political and economic instability constitute the push factors. Migration is also due to non-financial reasons such as the need to study or to join a family

member. Chen *et al* (2003), view migration as an investment in which the income gain along with other benefits resulting from migration must at least exceed the costs associated with it to justify the move, provided that there are no institutional or political barriers inhibiting migration.

Labour migration flows have an impact on the demography, culture, economy and politics of both destination and receiving countries. Immigration reduces the incidence of poverty in the sending countries, especially as immigrants send their remittances home. Remittances that immigrants send home are also a vital source of foreign currency which contributes to the development of the labour exporting country (Davies and Head 1995). Sending countries also benefit from reduced unemployment, accumulated savings, knowledge and skills transfer when immigrants return home.

UNFPA (2005), notes that labour immigrants solve the problem of labour shortages in the receiving country, as they fill the gaps created by emigration and inadequacy education and training in the host country. The receiving country benefits from knowledge and skills transfer from immigrants.

The receiving country also benefits from immigration and these benefits include economic welfare gains and increase in cultural diversity. The welfare of employees, which is lost through reduction of wages, is redistributed to consumers and employers. The welfare of employers improves since immigration tends to reduce costs of production, thus employers incur reduced costs and therefore profits increase. Welfare of consumers also changes since a reduction in costs of production will lead to a fall in prices of commodities. Producers benefit in the form of increased profits and consumers benefit from reduced prices. Cultural diversity leads to an increase in product range for consumers. Private individuals benefit from improved welfare which comes in the form of better wages and improved working conditions in the destination countries.

Labour migration has an impact on social, economic, political and environmental aspects of the host country and centrally to the public discourse is its impact on the labour market. There is a possibility that changes in the size and composition of the labour force due to labour immigration

could affect government efforts of trying to bring the country's labour market closer to equilibrium. Immigration tends to alter the quantity and quality of labour force (Carmel, 1989). The effect of immigrant workers on the local labour market depends on the structure of the economy of the receiving country and the skills composition of the immigrant workers.

It is often pointed out in economic models that changes in the size or composition of the labourforce resulting from immigration could affect labour market prospects of some native workers (Dustman *et al* 2003). Migrants tend to rob natives of their employment opportunities, thus displacing them in the labour market. Migrants are viewed as a cheap source of labour thus; they are more preferred by employers than their native counterparts. The possible negative effects of immigration on wages and employment outcomes of native workers are one of the core concerns in the public debate on immigration (*ibid*).

According to Davies and Head (1995), native workers may also be displaced by immigrants due to increased relocation, unemployment and retrenchment. Labour migrants depress wages, undermine working conditions and worsen job insecurity for native workers in the host country. Skills composition of the labour force may be altered due to increased migration. Under the assumption that immigrants own less capital per capita than natives, immigration slows down technological progress as well as the rate of growth of the economy (Drinkwater *et al* 2003).

Maharaj, (2004) observed that labour immigrants are also a cost to a labour importing country due to increased incidence of crime, violence and corruption (counterfeit passports, identity documents, visas and arranged marriages). Immigrants especially undocumented ones, increase the incidence of crime and corruption in the labour importing countries.

Migration is an extremely sensitive and emotional issue. It is often politicized as politicians play on the fears of the electorate, pitting them against migrants as the source of their problems and predicament (UNFPA, 2005). Immigrants are also viewed as a cost to the labour importing country as they do not pay enough taxes and thus overstretch government facilities such as health, education and prisons. As a result labour immigration can exacerbate underdevelopment in the receiving country. Immigration of labour is likely to influence the budgetary position of

the receiving country since the amount recent arrivals receive through health, education and welfare systems is unlikely to exactly balance the increased tax revenues from the new workers (Drinkwater *et al* 2003).

Immigration leads to brain drain and labour depletion in the sending country. It is argued that the loss of skilled personnel widens the development gap between origin and destination countries by slowing GDP growth in the former (UNFPA, 2005). The home country tends to lose people with scarce skills and also the most active age group of the population, with dire consequences on development in the sending country. The brain drain retards economic growth in the labour exporting country (*ibid*). The cost of losing qualified nationals results not only in the loss of future productivity of the skilled migrants but also in the loss of investment in the education and training of the migrant incurred by the country of origin.

## **1.2 Statement of the Problem**

The labour market impact of immigration is a hotly debated topic among economists and the general public. South Africa is currently facing an unprecedented inflow of migrant labour from the SADC region. The South African labour market landscape is affected by immigrant workers in many ways. However, this flow of labour migrants has been occurring since 150 years ago. Studies elsewhere have shown that migrant labour has the potential of increasing the unemployment or decreasing wages in the destination country (Arnold, 2005). Unemployment rate increases because native labour is displaced by immigrant labour while wages fall due to an increase in labour supply. On the other hand, it is also argued that migrants create their own demand.

Increased migration leads to an increase in demand for goods and services. As it is well known, labour demand is derived demand. It is derived from the demand for goods and services. If there is a surge in the demand for goods and services, more jobs will be created hence the unemployment rate will fall. In addition, as demand for goods and services increases wages are likely to increase.

These polar views on the likely effects of migration on labour markets in the receiving country imply that predicting the impact of labour migration inflows on the South African labour market can not be established without some rigorous and systematic examination of all the intervening factors. The critical question for South African policy makers is whether immigration of skilled and unskilled labour affects the labour market. To what extent does immigrant labour affect the South African labour market? In particular, does migration lead to more unemployment and to depressed wages? To our knowledge these questions have never received any precise answers in the South African context. Thus, there is need to provide answers to these questions.

In other words, there is a need to empirically establish the effect of migrant labour on the South African labour market. Basically this study seeks to provide empirical evidence on the impact of immigration on the country's labour market. The need for a precise quantitative research synthesis will eliminate reliance on predictions which may not be a suitable guide for policy recommendations.

### **1.3 Objectives of the Study**

The objective of this study is to establish whether immigration has a positive or negative effect on wages and employment in South Africa.

### **1.4 Hypothesis of the Study**

The study hypothesizes that;

- Immigration and unemployment have a positive relationship.
- Wages and immigration have a negative relationship.

### **1.5 Significance of the Study**

Little attention has been paid to the effect of immigration on the country's labour market. Thus, there is a need to carry out this research to fill the gap. One of the aims of the South Africa government through Accelerated and Shared Growth Initiative for South Africa (AsgiSA) is to reduce the unemployment rate (which currently stands at 25.5%) by 50% in 2014. This research will therefore contribute to government's efforts of understanding unemployment by establishing



whether labour migration contributes to the unemployment crisis. Thus, policy makers will benefit from this study as they formulate or evaluate labour market policies. This study will assist in the formulation of policies that will ensure the success of AsgiSA and other government labour market programs.

## **1.6 Organisation of the Study**

This dissertation will be organized as follows: Following this chapter, Chapter 2 provides some background information and the relationship between immigration and other Macroeconomic indicators. This chapter also looks at labour immigration according to location, age, country of origin, status (legal or illegal) and gender. Chapter 3 reviews theoretical and empirical literature. Chapter 4 contains the methodology, data analysis and interpretation of results. Finally, Chapter 5 concludes the study, and makes policy recommendations.

## **CHAPTER 2**

### **An Overview of Immigration trends in South Africa**

#### **2.1 Introduction**

The purpose of this chapter is to give an overview of migration trends in South Africa. This chapter is divided into four sub-sections. The first sub-section gives a historical overview of migration. This sub-section gives an understanding of history of South African migration volumes. The second sub-section discusses causes, benefits and costs of migration. This sub-section also examines the causes of migration and its consequences to both the sending and receiving countries. The third section discusses immigration and the South African labour market. An analysis of the possible impact of immigrant labour will be incomplete without an understanding of the South African labour market. Migration is discussed in relation to the labour market factors such as wages and employment. The chapter ends with some concluding remarks.

Migrant labour is an important labour market phenomenon which has both positive and negative influences on a receiving country's labour market. A country receiving immigrants benefits from increased Gross Domestic Product (GDP), employment creation and increased labour force (Holtz-Eakin, 2005). Immigrants increase the host country's GDP through increased consumption, increased productivity and labour force growth. In the host country, immigrant labour is important as it brings new skills and innovative ideas. The host country receives highly skilled workers who fill positions that might go unfilled (Castel-Branco, 2002). The immigrants are reliable, have low turnover and are hard working.

Immigrants create employment since they increase demand for goods and services. Demand for labour is output driven thus, an increase in demand for goods and services increases demand for labour. This will lead to an increase in employment opportunities for both natives and immigrants. Migration is also important to the migrants themselves as they will be able to use the

skills they have. They also benefit from better working conditions and better wages in another country.

However, on the other hand, labour migration may not be beneficial to the host country as these exert pressure on resources, increase crime rate, increase unemployment and even reduce wages (Adepoju, 1998). An increase in the number of immigrants may actually exacerbate underdevelopment in the host country. The labour exporting country is also deprived of its most productive labour force. The sending country loses its human capital. The country loses highly skilled personnel who are more productive. Migration separates families and thus, increases the risk of spread of HIV and other sexually related illnesses.

## **2.2 Migration: A Historical Overview**

Labour migrants constitute the fastest growing group of migrants in the world, currently estimated at 86 million (UNFPA, 2005). The most common destination of migrants have been Cote d'Ivoire and Nigeria in West Africa, Gabon in Central Africa, Kenya in East Africa and South Africa and Botswana in Southern Africa. Migration phenomenon in Africa can be better understood within the context of political and historical evolution of African societies (Adepoju, 1998). The labour migration story in Africa can be classified according to regions. Labour and irregular migration is common in West Africa. War refugees are common in East Africa and Southern Africa is known for contract labour migrants who seek economic opportunities in neighboring countries.

Immigrants from Lesotho, Swaziland, Botswana, Mozambique and Malawi played a significant role in shaping the country's economy while on the other hand; it led to an economic decline in the sending countries. One feature of South Africa's unique industrial history is that nowhere else in the world has an industrial economy employed for so long such a high proportion of oscillating migrants in its labour force (Kotze and Hill 1997).

The leading source of skilled immigrants into the South Africa during apartheid period was Europe. According to Mattes *et al* (2002), 47% of the country's immigrants were from Europe

and 31% of these were from the U. K. 41% were from Africa and of these 18% were from the SADC region. The country received 73% of its skilled immigrant workers from Europe.

The country's discovery of diamonds in the Orange Free State and gold in Witwatersrand in the 19<sup>th</sup> Century led to massive population movement and neighboring states became labour reservoirs to feed the hungry demands of mining magnates for cheap unskilled black labour (Solomon, 1996). The discovery of gold mines in the country benefited the whole of the Southern African region. Over the past century, the South African mines have depended on cheap male migrant labour from neighboring countries. The South African employers systematically recruited foreign migrants to supplement what they deemed to be an insufficient supply of domestic labour (Chirwa, 1998). The country received skilled and semi-skilled workers from Zambia, Malawi, Botswana, Mozambique, Lesotho, Swaziland, Angola and Zimbabwe, among others.

According to Crush (1999), there are three types of workers from the SADC region;

- Long standing suppliers such as Mozambique, Botswana, Lesotho and Swaziland.
- Episodic suppliers such as Malawi and Zimbabwe with fluctuating numbers over time.
- Occasional suppliers such as Zambia, Tanzania and Angola whose labour was once important but is not at present.

During the apartheid period more men migrated into the country than women. Women were discouraged to migrate by law and also by labour market requirements, since mainly men were employed in the mining, construction and agriculture sectors. Males migrated to work in Kimberley and Witwatersrand gold mines. They also worked in commercial farms and plantations.

Table 2.1 shows the percentage of SADC labour force (the main source of labour) in the South African labour market in the 70s. In the 70s the country's labour force in the mines was dominated by immigrant workers as these made more than 70% of employees in the South African mines.

**Table 2.1 Percentage of SADC Labour force in South African Mines**

Years	Percentage of Employees
1975	73.8
1982	42.8
1993	39

Source: Davies and Head (1995).

The changes in the laws and political status of sending and host countries contributed to a continual contraction of the migrant labour force in South African mines. From 74% in 1975, the proportion declined to 39% in the 1990s. The down-sizing of industries in the mid 80s led to the loss of employment, which further reduced the labour force. Employment fell due to a crisis in the gold mines which resulted from a decline in world gold prices, closure of gold mines, increasing labour costs and decreased profits.

In the late 80s and early 1990s the fall in gold prices led to the closure of some gold mines and a large number of mine workers were retrenched. Employment fell also due to stagnant gold prices and rising inflation. Since migrants composed of a large number of mine labour force they are the ones who were most affected. Workers were employed as contractors during this period. The number of contractors grew from 3% to 10% between 1987 and 1994 (Crush *et al* 2001). A lot of jobs were lost and sub-contracting grew.

According to Chirwa, (1996) of the 201 617 jobs lost in the mining sector between 1987 and 1993, 60 699 were held by foreign migrants. This expulsion of foreign labour had begun in the 70s. According to Davies and Head (1995), between 1970 and 1985 there was substitution of large numbers of foreign migrant workers with South Africans as mine management sought to reduce its dependence on what were seen as unreliable sources of foreign labour. South African natives did not want to take wage employment, thus changes in government policies led to a substitution of immigrants with natives. Between 1988 and 1992 about 13 000 Malawian mine migrant workers were repatriated from South Africa after 200 of them had tested HIV positive the previous two years (Chirwa, 1998). A misunderstanding between the South African and

Malawian governments over HIV tests which was regarded as immoral by the Malawian also led to a further fall in migrant labour in the South African mines.

The rise in the need to employ locals led to a fall in employment of unskilled immigrants and only skilled immigrants could be absorbed into the system. Thus in only a decade, the mining industry had shed over 50% of its workforce (Crush and James 1995 and Crush *et al* 2001). After gaining independence countries such as Tanzania, Zambia, Zimbabwe and Angola also began withdrawing their workers from the South African labour market. This also led to a decline of foreign labour in the South African mines.

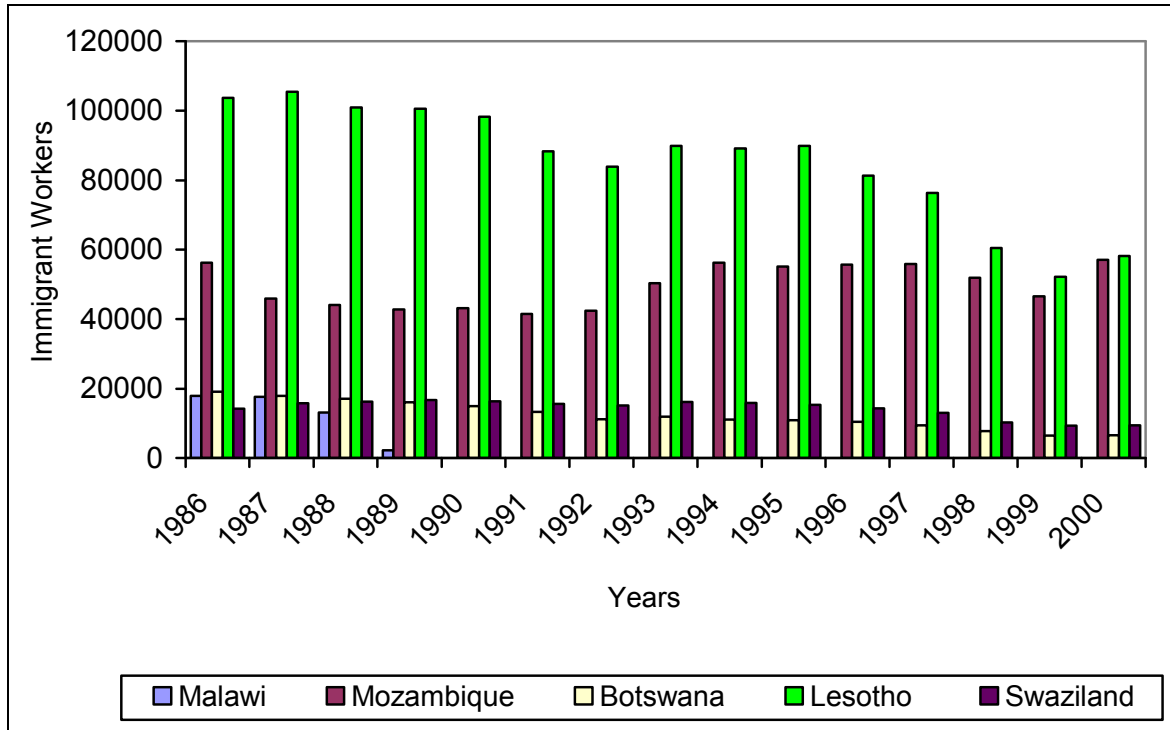
### **2.3 Structure and Trends in Migration**

In this sub-section, we examine the structure and trends of migrants. We look at the following structural issues: origin, migration by age, migration by gender (male and female) and migration status (legal and illegal). The first sub-section discusses immigration by origin. The second sub-section discusses migration by status. The third subsection covers feminisation of immigration and lastly immigration by age is covered in the last sub-section.

#### **2.3.1 Origin**

Swaziland, Mozambique, Botswana and Lesotho are standing suppliers of labour to South Africa. Malawi and other countries in and outside the SADC region supplied fluctuating numbers. South Africa received large numbers of migrant mine labour from its long standing suppliers. Migrant labour according to the country of origin is shown in the Figure 2.1;

**Figure 2. 1 South African Miners by Country of Origin**



Source: Crush and James (1995) and Crush, (2005).

Figure 2.1 shows migrant workers according to the country of origin. As shown above Lesotho (the long standing supplier of labour) is the leading source of labour into South Africa through out the period. Basotho men make up the largest number of migrant workers in the mines. Lesotho’s economy can not provide enough jobs for its citizens and as a result they rely on South Africa for employment. The country therefore supplied 100 000 workers as from 1986-1989. The number of Basotho migrant mine workers started decreasing as from 1990. By 1998 South Africa had lost half of Lesotho migrant mine workers but the country still remained the largest supplier of mine migrant labour.

Mozambique is the second largest source of labour and Botswana and Swaziland have also significant numbers. Mozambique supplied more than 40 000 workers annually. The number of mine migrant workers from Botswana fluctuated between 14 000 and 18 000.

The least contributors to South African labour force is Malawi, which is mainly an episodic supplier. Between 1986 and 1987 the country supplied more than 10 000 migrant workers annually. The numbers started declining in 1988 and after the HIV saga in 1989 the numbers fell drastically. As from 1992 to 2000 the Malawian recruitments fell to zero. There are no figures for Zimbabwe and Zambia.

### **2.3.2 Immigration by Status**

Labour migrants into South Africa can be classified into legal and illegal. Legal migrants hold work permits, asylum status and permanent residence. Migrant workers with workers permits are usually skilled. Those with permanent residence would have married a local person or worked in South Africa legally for a certain number of years. Asylum seekers are usually from war torn countries. The most common type of migrant labour into the country is holders of work permits and asylum seekers.

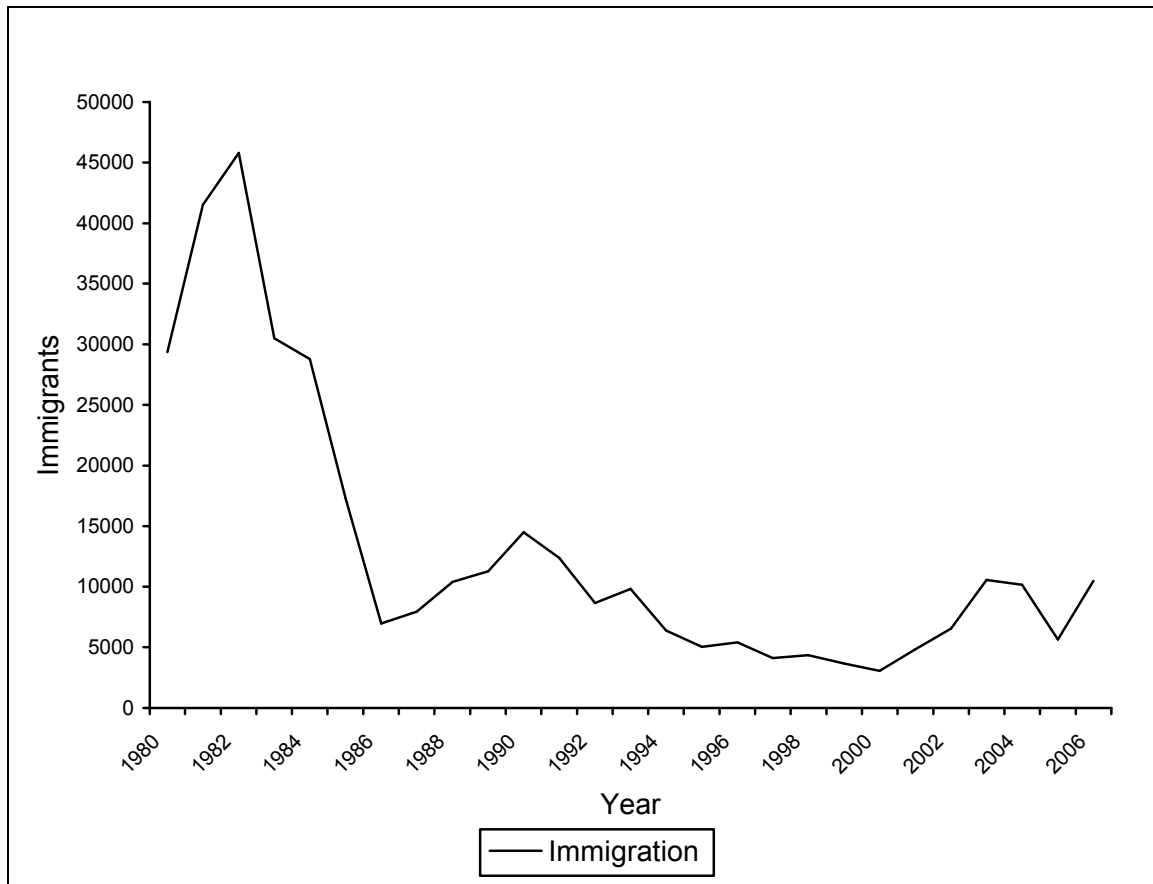
Most legal immigrants especially in the 1980s were mine workers recruited by TEBA<sup>1</sup>. A fall in demand for mine workers led to a decline in the number of legal migrant workers into the country. The post apartheid period is dominated by work permit holders and mainly those with scarce skills. There are few asylum seekers in the country. Work permit holders are from Kenya, Nigeria and Zimbabwe and most asylum seekers are from Somalia.

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<sup>1</sup> TEBA is an organization responsible for recruiting South Africa's mine labour from Southern Africa.



**Figure 2. 2 Immigration Trends**



Source: StatsSA, (2006).

In the 1980s legal migrants were from South Africa's suppliers of mine migrant labour. Since the country depended on migrant labour in the mines the migration volumes were high. A shift from foreign to local employment led to a fall in recruitment numbers into the country.

Figure 2.2 shows migration trends in the country. In the early 80s the mine employment attracted more immigrants into the country and restructuring of the gold mines decreased employment as a result immigration fell in 1983 and even further in 1985. The immigration numbers continue to fall even after the post apartheid era, since legal migration is being replaced by clandestine migration. A change in the country's immigration act brought new requirements for issuing works permit leading to a decline in legal migrants entering the country.

A fall in mine recruitments and issue of work permits led to a growth in clandestine migration. Thus, more illegal than legal migrants enter the country from the SADC region. Clandestine

economic migration is driven by poverty and unemployment in home countries and fuelled by expectations that political change in South Africa might create a more accommodating environment (Davies and Head 1995).

According to Minaar *et al* (1995), in 1990 the country was estimated to be having 1.2million illegal immigrants, 2million in 1991, 2.5million in 1992, 3million in 1993 and 5million in 1994. Illegal immigrants include holders of visitors' visas who overstay in the country and border jumpers. Illegal immigrants classify themselves as natives as most of them hold fake South African identity documents. They are the most common type of immigrants, especially in the post apartheid period. They are mainly unskilled therefore substitute natives in the labour market. These immigrants are blamed for worsening South Africa's labour market conditions.

### **2.3.3 Shift in the Migration Patterns**

The Renamo War in Mozambique led the residents of this country to migrate to South Africa and these constituted a large proportion of the labour force in the country's mines and estates in 90s. South Africa was a home to a large number of Mozambican refugees in the 80s and the early 90s. Immigration during this period was predominantly clandestine. The end of the Renamo War in 1992 led to a decline in immigrants from Mozambique into the country.

The decline in the Mozambican immigrant labour to South Africa was due to the closure of many mines in South Africa. The immigrant labour from Mozambique was mainly absorbed in the gold mines thus, the restructuring and closure of some gold mines affected employment of immigrant labour from Mozambique. Since the mid 1990s, the trend has been towards a further decline in the employment of migrant miners from Mozambique, at an average of about -2% per year (Castel-Branco, 2002).

The Mozambican immigrants are being slowly overtaken by migrants from Zimbabwe, Ghana, Kenya, Nigeria and Somalia. The collapse of the Zimbabwean economy has led to an increase in the number of emigrants from that country. Immigration from Zimbabwe is also dominated by clandestine migration. The decline in economic conditions in Zimbabwe as evidenced by rising

unemployment, shift from formal to informal sector employment, hyperinflation and shortage of basic commodities has led to an increase in economic refugees to South Africa.

Ghananians, Kenyans and Nigerians usually hold permanent residence status. Most of these also have small businesses through out the country. Their numbers are growing rapidly. They operate internet cafés, saloons, spaza shop shops and taxis in the country.

#### **2.3.4 Feminization of Immigration**

Immigrants can also be classified according to gender. During colonialism male migrants dominated migration volumes into South Africa but now female migration has also been on the increase.

According to Adepoju, (2004) the traditional pattern of migration within and from Africa is often male dominated. Male migration from Southern Africa to South Africa is common. However, migration is increasingly becoming feminized. Since South African independence, female migration has been on the increase. Women generally migrate legally. Female migration has long been viewed as due to family reasons but it is now due to economic reasons. Neoclassical theorists view women migration as being due to passive decisions made at household level. Thus, women often migrate to join a spouse in another country.

The proportion of economically active population of women entering the South African labour market is also rising. Skilled and professional women are migrating in large numbers. Women, especially professionals, migrate to earn a decent living in another country. Migrant women without a specific profession are involved in informal cross border trade. For example, women from Zimbabwe sell curiots in Pretoria, Johannesburg, Port Elizabeth and Cape Town.

A large number of immigrants from Lesotho and Zimbabwe are women (Nkau, 2003). The increase in independent female migration is not confined to national borders. Female migrants are increasing.

Another reason for migration of women is that they are pushed by family conflicts to go and look for employment beyond borders. A large number of women are employed as waitresses, hotel maids, kitchen staff and child minders in South Africa.

### 2.3.5 Immigration by Age

Migration volumes also vary by age. Economically active age groups dominate migration numbers into the country for both male and female migrants.

**Figure 2. 3 Male Immigrants**

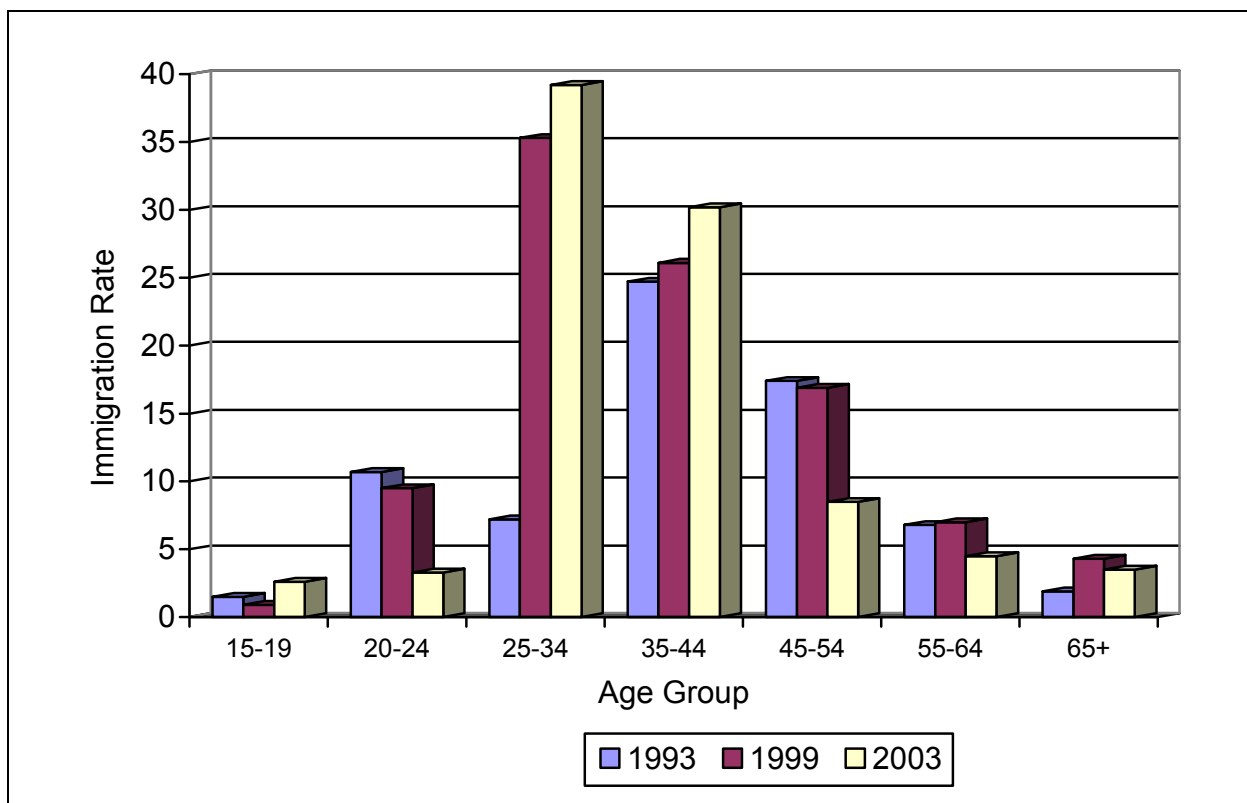
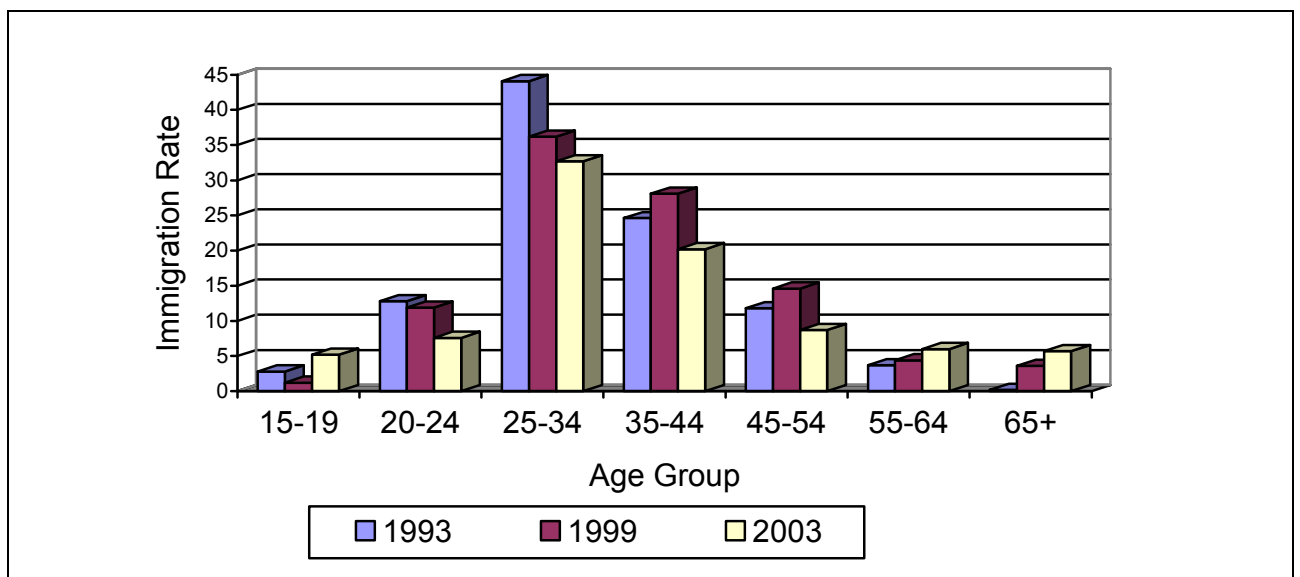


Figure 2.3 shows migration of males according to age. The economically active age group dominates migration into the country. In 1999 and 2003 more males between the age groups of 25-44 entered the country. The smallest number of immigrants is that of school going age that is, 15-19 years. The country also receives small numbers of people who are 65 years and above.

**Figure 2. 4 Female Immigrants**



Source: StatsSA, (2003).

Female immigrants who are economically active consist of the largest number of immigrants into the country. The country also receives a smaller number of school going age females and also there are small numbers of immigrants amongst those who are 65 years and above.

## 2.4 Causes and Consequences of Migration

The causes of immigration to South Africa have taken economic, political, social and demographic dimensions (Adepoju, 1998; Heisel, 1982; Akokpari, 1999). These causes can be divided into pull and push factors.

### **2.4.1 Pull Factors**

Pull factors encourage individuals to move to a certain area or economy. These factors include safety, economic stability, flexible law and order, employment opportunities, better living standards and tribal relations. In the subsequent subsections we discuss some of these factors.

#### **Economic Factors**

More than half of immigrants in South Africa are economic refugees (Akokpari, 1999). After the independence of many African countries migration into South Africa became dominated by economic refugees. According to Adepoju, (1998) economic considerations are of primary importance in decisions to migrate, in that people migrate ultimately to improve their economic well being. Employment prospects in the South African mines led to large volumes of migrant labour into the country from Botswana, Malawi, Lesotho, Mozambique, Swaziland and Zimbabwe. South Africa remained the only country that actively recruits foreign labour thus heightening the sense of regional dependency (Kotze and Hill 1997).

South Africa serves as a magnet to those seeking employment, higher living standards, brighter economic prospects and the size of the South African economy makes the allure of the country almost overwhelming to many in the region (Solomon, 1996). Economic refugees who are attracted to South Africa which is viewed as the industrial centre in the region, come in search of employment.

More than half of SADC's GDP is in South Africa. South Africa's relative economic buoyancy in a region of declining economies has become a centripetal force attracting both skilled and unskilled labour which uses both formal and informal migratory routes into the country (Akokpari, 1999).

Financial incentives act as a pull factor for immigrants as well. If private benefits of migration exceed private costs of migration then individuals migrate. The differences in wage levels between countries lead people to migrate. Variations in taxation and welfare systems between nations lead people to migrate. The wages earned by workers in South African mines are 6 times

higher than in Mozambique (Kanyenze, 2004). This has led to an increase in the number of Mozambicans flocking to South Africa to earn a decent living.

Improved technology has influenced the growth in immigrants. Technology often leads to an easy access to information, reduced travel costs and increased opportunities abroad.

### **Political Factors**

The political stability in South Africa attracts immigrants who flee civil unrest and human rights abuse in their home countries. The South African workers have other freedoms. They are allowed to exercise their rights. Immigrants enter South Africa in large numbers to take advantage of political stability in the country.

### **Socio-cultural Factors**

Socio-cultural factors are also important in pulling migrants to South Africa. South Africa consists of a large number of Batswanas, Basothos and Swazis and these attract people of the same tribes from Botswana, Lesotho and Swaziland to the country. Mozambicans are also attracted to Gazankulu where there are Shangaan people. Thus, tribal relations and networks are an important factor in migration.

#### **2.4.2 Push Factors**

These are factors that force an individual or persons to move. These include drought, famine, poverty, economic depression, unemployment, lack of peace and security and civil wars. These factors are discussed in more detail in the following subsections.

### **Economic Factors**

Economic decline in a country can lead people to migrate. For example, the economic collapse of Zimbabwe, has led to a large number of economic refugees from that country to enter South Africa and Botswana. Zimbabwe's economic insecurity with unemployment currently at levels

above 80% and galloping inflation rate which is currently above 230 million % has led to a rise in the out flow of economically active people from the country. Thus, high unemployment levels, declining wages and deteriorating working conditions push the economically active age group out of Zimbabwe. The other example is Malawi. High levels of unemployment in Malawi in the 70s, led the president of that country to negotiate with the South African government to import labour from Malawi (Chirwa, 1996). Thus, South Africa employed Malawian migrant miners to relieve unemployment pressure in that country.

Structural Adjustment Programmes (SAPs) in the mid 80s and early 90s led to shrinking job opportunities in countries like Malawi, Zambia, Mozambique and Zimbabwe and then leading citizens from these countries to migrate to South Africa. SAPs were meant to make labour markets flexible. They affected formal sector employment and real wages in most Southern African countries. The impact varied according to labour markets. Table 2.2 shows the effect of SAPs on formal sector employment.

**Table 1.2 Sub-Saharan Africa: Evolution of employment in the Formal Sector during the Adjustment Phase (as a Percentage of active Population)**

Country	1990	1995
Uganda	17.2	13.3
Zimbabwe	28.9	25.3
Zambia	20.7	18.0
Tanzania, Republic of	9.2	8.1
Kenya	18.0	16.9

Source: ILO, (2004).

Table 2.2 shows the effect of SAPs on formal sector employment for selected African countries between 1990 and 1995. Table 2.2 shows that SAPs had a large impact on formal sector employment in Zimbabwe and Uganda. The impact was moderate in Zambia and it was low in Kenya and Tanzania. The fall in employment opportunities partly contributed to the migration from these countries to South Africa (ILO, 2004).



SAPs also led to a fall in real wages for workers see Table 3. South Africa experienced a small fall in real wages compared to other countries. Real wages fell by large percentages in Kenya, Zimbabwe and Tanzania. As result workers migrated from countries which experienced a large fall in real wages to South Africa were wages fell by smaller percentages (ibid).

**Table 2.2 Wage Dispersion and Real Wage Changes in Manufacturing (US\$) (1975-1979 to 1987-1991)**

Country	Real Wage
South Africa	-7.4
Zimbabwe	-32.2
Kenya	-40.4
Tanzania	-83.1

Source: ILO, (2004).

### **Political**

Political change has also been a factor in determining labour movements. Civil and ethnic conflicts within a country cause migration of a certain people. Racism and oppressive governments during colonialism led people to flee their homes. Independence wars in Mozambique, Zimbabwe and Zambia led people to seek refugee in South Africa. For example, the Renamo war in Mozambique in the 80s to early 90s forced Mozambicans to flee to South Africa.

The Zimbabwean workers are not allowed to go on strike when they are not satisfied with their working conditions. For example, in 2004, 980 workers were fired after they participated in a legal strike which the Zimbabwean government considered as being illegal. Currently the government froze wages for all workers. Employers who hike salaries without permission from the government face heavy penalties or prosecution.

Land acquisition which disrupted commercial farming in Zimbabwe increased the risk of drought and also forced people to migrate. Workers who lost their jobs due to land redistribution had to seek refugee in the neighboring countries.

## **Environmental Factors**

Migration is also due environment factors. Akokpari (1999), observed that 11.6million Africans in ten countries were threatened by famine. Factors such as drought and floods displace people from their homes, thus leading people to migrate. Land degradation in Mozambique affected agricultural output thus, displacing people.

### **2.4.3 Consequences of Migration**

In this sub-section we discuss the negative and positive effects of migration on a receiving country.

#### **Immigration and Economic Growth**

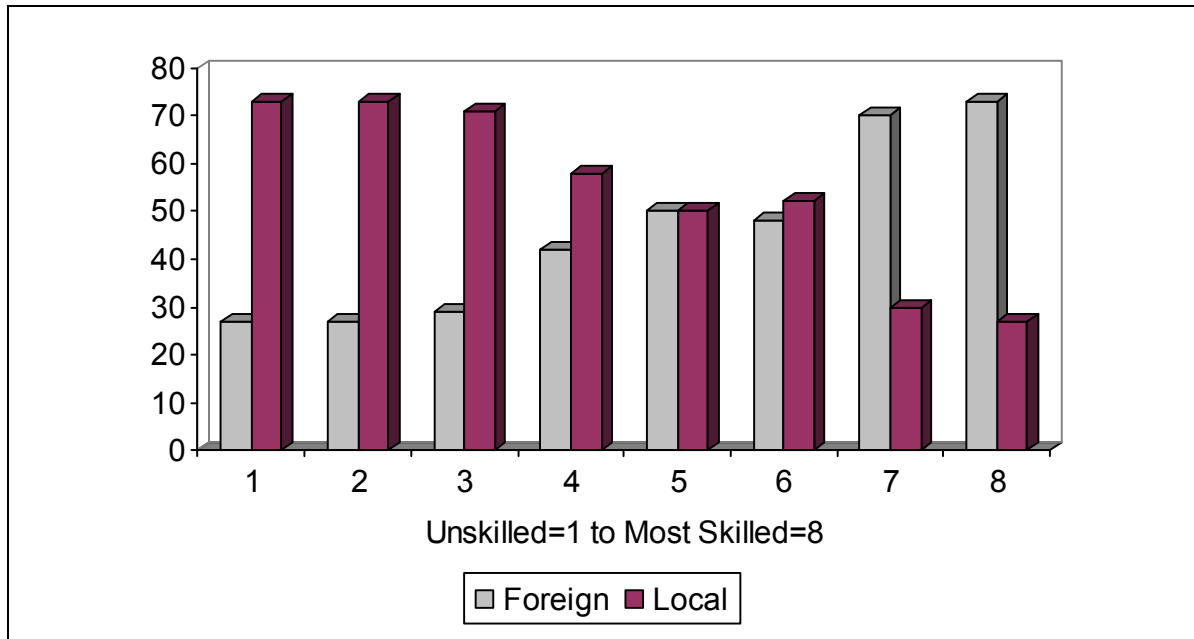
The growth of the economy derives from capital accumulation, productivity increases and the growth of labour force (Holtz-Eakin, 2005). Labour force is one of the important sources of economic growth. Economic growth may arise from productivity growth rates, labour force participation rates and labour force growth. Immigrants are likely to increase productivity in the host country's economy. An increase in immigrants increases labour force participation since immigrants consists mainly of the economically active age group. As a result, an increase in participation rate increases economic growth. Migration shifts the economy to more labour intensive production which is not negative in its economic impact per se (Drinkwater *et al* 2003). If immigrants entering the county are highly skilled then the human capital dilution will off set the physical capital dilution the economy of a receiving country grows.

Immigration boosts output demand thus, leading to growth in the country's economy. According to Eaton, (1998) immigrant workers increase demand by providing new goods and services, overall production rises and also help industries to expand thus, natives benefit. The increase in the number of immigrants increases the population in the destination country leading to a rise in the demand for goods and services. This leads to the expansion of output.

#### **Brain Gain**

In the turn of the 20<sup>th</sup> Century demand for unskilled labour decreased as more skilled labour was absorbed into the country's labour force. Skilled migrants have higher employment opportunities compared to their unskilled counterparts.

**Figure 2.5 Skills Composition in the Labour Market**



Source: Crush and James (1995).

Figure 2.5 shows that immigrants are highly skilled compared to natives. The country therefore benefits from a brain gain. The skilled labour from other nations fills gaps that exist in the country's labour market. The largest number of natives falls in the category of the unskilled and some natives are semi-skilled and only a smaller proportion is highly skilled. For example, in the mining sector, Mozambicans are portrayed as good artisans, Basotho are skilled shaft sinkers and Swazis are excellent mechanists (Crush *et al* 2001).

South Africa has provided a new entry gate for many young sportsmen particularly footballers from other African countries and these are from Burkina Faso, Malawi, Nigeria, Zambia and Zimbabwe (Akokpari, 1999). The country's top football clubs draw a large number of players from other countries. Immigrants take jobs that would otherwise not exist or that complement the jobs of native workers, increasing employment opportunities of natives (Holtz-Eakin, 2005).

Immigrants solve the problem of skills shortages in the labour market of the receiving country. Immigrants complement native workers in the production of goods and services.

Immigrants also create jobs since some enter the country as entrepreneurs and business people. Some migrants enter the country to join mainly the SMMEs (Small Medium and Micro Enterprises) sector. Most migrants have started their businesses in the city centre of Johannesburg. SMMEs operated by immigrant entrepreneurs in Johannesburg include clothing and retail shops, curios shops, salons, night clubs, restaurants and music shops. The immigrant entrepreneurs include nationals from Zimbabwe, Mozambique, Malawi and West Africa. These help to create employment in the economy since they employ natives to assist them.

Immigrants of different skills enter the country. Table 2.4 shows the number of immigrants who entered the country as from 1994-2005. The country received a decreasing number of immigrants in each skill as from 1994-2005. Soon after independence the country received 1103 professionals but the numbers decreased with time and in the beginning of the second decade of democracy the number of professionals who migrated into South Africa had decreased to 154. The number for managerial immigrants fell by half in the same period. The immigrants numbers fell by more than half for clerical and service, transport and communication, artisans and production.

**Table 2.4 Immigration by Skill**

	Professional	Managerial	Clerical and Service	Transport And Communication	Artisans And Related Occupations	Production
1994	1103	490	400	19	184	78
1995	798	374	250	7	103	58
1996	843	461	315	18	117	62
1997	551	418	64	19	93	31
1998	449	424	48	8	52	17
1999	378	258	199	25	169	218
2000	331	241	21	5	15	5
2001	524	258	62	3	11	10
2002	576	382	26	5	14	9
2003	499	416	25	7	10	0
2004	436	484	13	5	13	3
2005	159	229	49	2	7	19

Source: StatsSA, (2006).

The brain gain also contributes to GDP growth in the destination country since the country receives skilled labour which fills gaps in communication, health and other sectors, thus improving productivity. In the destination countries labour migration rejuvenates the workforce and expands human capital resource base, thus enhancing productivity and prosperity (Holtz-Eakin, 2005).

### **Remittances**

Sending countries benefit from migration as they receive remittances. In Sub-Saharan Africa remittances constitute more than 50% of the country's GDP (World Bank, 2003). Remittances are viewed as a source of income to immigrant families and source of foreign currency to the sending countries. They are viewed as a stable source of income as these can be sent home even during periods of economic ups and down swings of the business cycle as this money is needed to assist families left at home. The high proportion of remittances devoted to consumption reflects that migration and remittances are part of the strategies of individual migrants and their families to escape poverty and raise standards of living (ibid).

Remittances smoothen incomes and thus improve the welfare of households that receive them. According to UNFPA, (2005) a 10% rise in remittances leads to a 1.2% decline in poverty. Thus, a negative relationship has been identified between remittances and poverty levels in the labour exporting nations.

Remittances are also viewed as foreign currency reserves for the country and thus contribute to the country's balance of payments. According to World Bank, (2003) remittances constitute a net positive transfer from relatively richer to relatively poor individuals, thus smoothening consumption and alleviating liquidity constraints.

Lesotho is one of the countries that receive the highest remittances. The country is mountainous with a small area for cultivation. The country can not create sufficient jobs for its citizens and as a result Basothos have to look for employment in South Africa. A large number of Basothos are employed in South African mines. Migrants through their remittances are an important source of income since this income consists more than 50% of the country's GDP. The migrants send more than 70% of their income home, by so doing they improve their countries' Balance of Payments.

According to Davies and Head (1995), remittances accounted for 39% of the rural household income in Lesotho in the mid 80s and TEBA payments in 1992 were equal to 65% of the country's GDP in 1995. Almost half of the country's GNP is migrant's remittances. For example a survey conducted in 1991 revealed that almost 40% of rural households in Lesotho were dependent on the remittances of migrants working in the mines of the Witwatersrand (Solomon, 1996). In the case of Mozambique remittances amounted to 42% of the country's total visible exports in 1992 (Davies and Head 1995). The development of these countries depends on remittances from South Africa.

Most of the citizens of Zimbabwe depend on remittances. According to Bloch, (2006) in 2003, 28.5% of households in Zimbabwe had remittances as one of their income strands. The figure is likely to be higher currently due to continued emigration from that country. In Botswana remittances covered 80% of the current account deficit (World Bank, 2003).

**Table 2.5 Remittances by Country**

<b>Country</b>	<b>Remittances in Millions of Rands</b>
Botswana	133.28
Lesotho	1675.84
Malawi	57.19
Mozambique	2241.71
Swaziland	432.29
Other SADC	1531.86

Adapted: Genesis Analytics, (2006).

Table 2.5 shows that, Mozambique remits the highest amount of money annually compared to other African countries. Mozambicans remitted R2241.71 million. The Mozambican citizens also depend on the remittances sent home by their families outside the country. Migrants from Lesotho remitted the second largest amount of money. The remittances for Basotho amounted to R1675.84 million. Malawians and Batswanas remitted small amounts. Their remittances amounted to R57.19 million and 133.28 million, respectively. The remittances sent to Malawi are the lowest. This is because of a lower number of the country's nationals in South Africa.

## **2.5 Immigration and the South African Labour Market**

The labour market is where buyers and sellers of labour meet to exchange labour services. A wage is the price of labour. It is determined by demand and supply for labour. This section provides an overview of the labour market and how immigration may impact on key labour market variables.

### **2.5.1 Employment Differentiation**

Migrants are usually segregated in the host country's labour market. Language differences and other requirements of the host country's labour market lock immigrants in certain positions. Immigrants occupy positions or take jobs that are shunned by natives. They usually do casual work or are employed by subcontractors. Immigrants are employed in jobs which they are under paid and also they are not protected by unions (Crush and James 1995). Most foreigners are

employed as contractors in the mining industry. Workers employed by sub-contractors work for long hours and their wages are below the poverty datum line. The workers who are employed by subcontractors are not attached to the company thus, they do not benefit from medical schemes, sick leave, pension, severance pay and death benefits.

### **2.5.2 Immigration and Self Employment**

South Africa receives immigrant entrepreneurs from other countries in Africa. These include migrants from Nigeria, Somalia, Democratic Republic of Congo and Zimbabwe, among others. Most of these immigrant entrepreneurs have refugee status. Peberdy, (2002) noted that non-South African participants in the retail informal sector fall into four interconnecting and overlapping categories and these are mobile street traders, fixed street traders, street traders involved in cross border trade and cross border traders and shoppers.

Mobile street traders are from Zimbabwe, Ghana, Ethiopia and Somalia. Cross border traders and shoppers are from Mozambique and Zimbabwe. Most cross border traders hold visitor's visas and they travel monthly between South Africa and their home countries. These migrants supply formal and informal traders in their home countries with goods from South Africa. Fixed street traders come from Senegal, Democratic Republic of Congo, Ghana, Mali, Somalia and Nigeria. Most of the fixed street traders have permanent residence and some of them have refugee status.

At least 20% of SADC entrepreneurs involved in the handicraft/curios sector of street trade in South Africa employ people (ibid). The informal sector creates employment for the local people thus, to a certain degree, reducing unemployment in the country.

### **2.5.3 Immigration and Wages**

Economic theory suggests that immigration into a closed labour market affects the wage structure in that market by lowering the wage of competing workers and raising the wages of complements (Borjas, 2004). Low skilled immigrants compete with low skilled natives in the host country's labour market. Entry of large numbers of immigrants with little education



probably slows the growth of wages of native-born high school drop outs at least initially, but the ultimate impact on wages is difficult to quantify (Holtz-Eakin, 2005).

Immigrants alter the wages of the destination country's labour market (Borjas, 2004). Immigrants increase labour supply as a result an increase in labour supply depresses wages. According to UNFPA, (2005) scarcity of highly skilled workers increases their wages and lowers the wages of unskilled workers leading to higher income inequality in the labour force. Immigrants who consist of large numbers of unskilled workers increase supply of labour in the market leading to a fall in wages. Many workers feel that the presence of illegal foreign workers lead to a decline in host country's working conditions (Solomon, 2000).

Immigrant workers are locked in low paying jobs. According to Kanyenze, (2004) average wages for all employees in South African mines 1995 were R1 400 per month and Basotho migrants earned between R700-R800 per month in 1992 and 1993. Immigrants are paid lower wages than natives. In the agricultural sector migrants earned three quarters of the wage of permanent staff (ibid).

#### **2.5.4 Immigration and Wage Employment**

Workers are continually searching for better jobs while firms are searching for better workers, thus; the value for marginal product of labour is equated across firms and across labour markets (Borjas, 1996). South Africa is one of the countries that depend on qualified personnel from other nations. Immigration leads to brain gain in the receiving country. For example, due to shortage of doctors in the rural South Africa the Department of Health under RuDASA<sup>2</sup> employs health workers from other countries.

According to Eaton, (1998) immigration might not only affect the size of the immigrant share in a particular industrial or occupational category in a particular city, it may affect the size of the category itself. Immigrants fill positions that exist in the labour market. The employment of citizens of neighboring states in South Africa is one of the largest established and most enduring relations between South Africa and the rest of the region (Davies and Head 1995). The country is

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<sup>2</sup>Rural Doctors Association of Southern Africa.

faced with a problem of shortage of professionals as a result immigrants who hold scarce skills tend to fill position which exist in the labour market. The country imported 200 doctors from Zimbabwe in 1991 and over 50% of doctors working in the government hospitals are non-South Africans (Simon, 1998).

In 2007, the Ministry of Health recruited doctors from Tunisia. The country now recruits labour as far as North Africa. Skilled immigrants bring innovation to the economy through new skills and ideas. Immigrants solve the problem of labour shortages in the host country's labour market.

Table 2.6 shows employment of immigrants in Durban by sector. 28% of immigrants do casual jobs. Most immigrants are unskilled and skilled ones who fail to get professional jobs take casual jobs. A large group of immigrants do casual jobs since it is easy to find jobs in this sector as they do not require work permits. 12% of immigrants work in restaurants. Restaurants are the second largest employers of migrants. Immigrants, especially the unskilled ones, get forged identity documents when they arrive in the country. They therefore use them to get jobs in restaurants.

**Table 2.6 Immigrants Employment by Sector**

Type of Employment	Percentage
Casual Work	28
Restaurant	12
Manufacturing	10
Construction	8
Domestic Services	6
Butchery	5
Filling Station	4
Retail	3
Taxi	3
Unemployed	12
Other	9

Source: Maharaj and Moodley (2000).

Manufacturing and construction sectors employ 10% and 8% of immigrants respectively. Few immigrants get employment in these sectors and even fewer immigrants get employment in the domestic service, butcheries, filling stations, retail and taxi industry. 9% of immigrants work in other sectors. 12% of immigrants fail to find jobs thus, remain unemployed.

### **2.5.5 Immigration and Unemployment**

Migration is often mentioned in South Africa as a partial explanation for the increased unemployment rates (Tsikata, 1999). Southern African countries such as Zimbabwe, Lesotho, Zambia and Swaziland are reported to have high unemployment rates than South Africa. South Africa is importing unemployment from the neighboring countries such as Zimbabwe with unemployment rate above 80%, Lesotho 45% (2002), Kenya 40% (2001), Zambia 50% (2000) and Swaziland 40% (2006). As a result labour migrants from these countries seek employment in South Africa.

Illegal immigrants increase the levels of unemployment in the country by displacing low skilled native workers. According to Solomon, (2000) in the food and agriculture sector, organizers of the Food and Allied Workers Union (FAWU) have noted the presence of large numbers of illegal aliens working on farms in the Northern Province, Mpumalanga and on the sugar plantations of northern KwaZulu Natal. Illegal immigrants are preferred to natives because they are less costly since they work for shelter, food and they resist unionization due to their illegal status.

The relationship between immigrants and unemployment in South Africa is positive. Migrants substitute natives in the labour market. The fact that immigrants are usually not members of a union makes them be more preferred by employers since they can accept lower wages which natives can not take. As a result they rob natives of their employment opportunities and consequently, unemployment crisis in the country worsens. The South Africa's economic growth can not create enough jobs for the growing labour supply. The migrants entering the country exacerbate the unemployment levels as they take the only opportunities that are supposed to be taken by natives.

Recent xenophobic attacks in Johannesburg prove the effect of immigrants on welfare for natives. The xenophobic attacks which started in Gauteng and spread through out the country were due to the fact that the natives felt that the immigrants are worsening unemployment levels by stealing jobs from natives and also that they in the process depress wages.

### **2.5.6 Immigration and Labour Supply**

Labour migration is viewed as one of the key determinants of structure, distribution and size of a country's population. Immigrants increase labour supply in the host country's labour market. Immigrants are dominated by economically active age group. An increase in labour supply solves the problem of labour shortages in the host country's labour market. The South African labour market has an oversupply of unskilled labour and under supply of skilled ones. Large numbers of unskilled labour enter the country's borders thus, worsening the country's labour market conditions. In the South African case immigrants increase labour supply of unskilled labour as a result they do not only solve the problem of labour shortages, but at times, exacerbate the unemployment crisis.

### **Conclusion**

The main aim of this chapter was to provide a background to this study by linking labour migration with labour market variables such as wages and unemployment. Evidence from this chapter shows that migrants have an impact on wages and employment opportunities of natives. The chapter used labour supply, economic growth, wages and unemployment to explain the consequences of migrants on the labour market. Brain gain is the most important positive consequence of migrants in South Africa but, since not only scarce skilled migrants enter the country, labour market conditions also deteriorate due entry of low skilled migrants.

## **CHAPTER 3**

### **Literature Review**

#### **3.1 Introduction**

This chapter provides a review of literature on labour. The chapter is divided into theoretical and empirical literature. The theories discussed include the Neoclassical, Area-Analysis and the Hecksher-Ohlin Models. The empirical literature section reviews both international and local literature.

#### **3.2 Theoretical Literature**

This sub-section discusses the theoretical framework that underpins the impact of migration on the labour market. The theories discussed focus on the impact of immigration on wages and employment. We begin with an examination of the basic neoclassical framework. This is followed by the Area analysis model, which is a variant of the neoclassical framework. Another variant of the neoclassical frame work, the Hecksher-Ohlin is examined last.

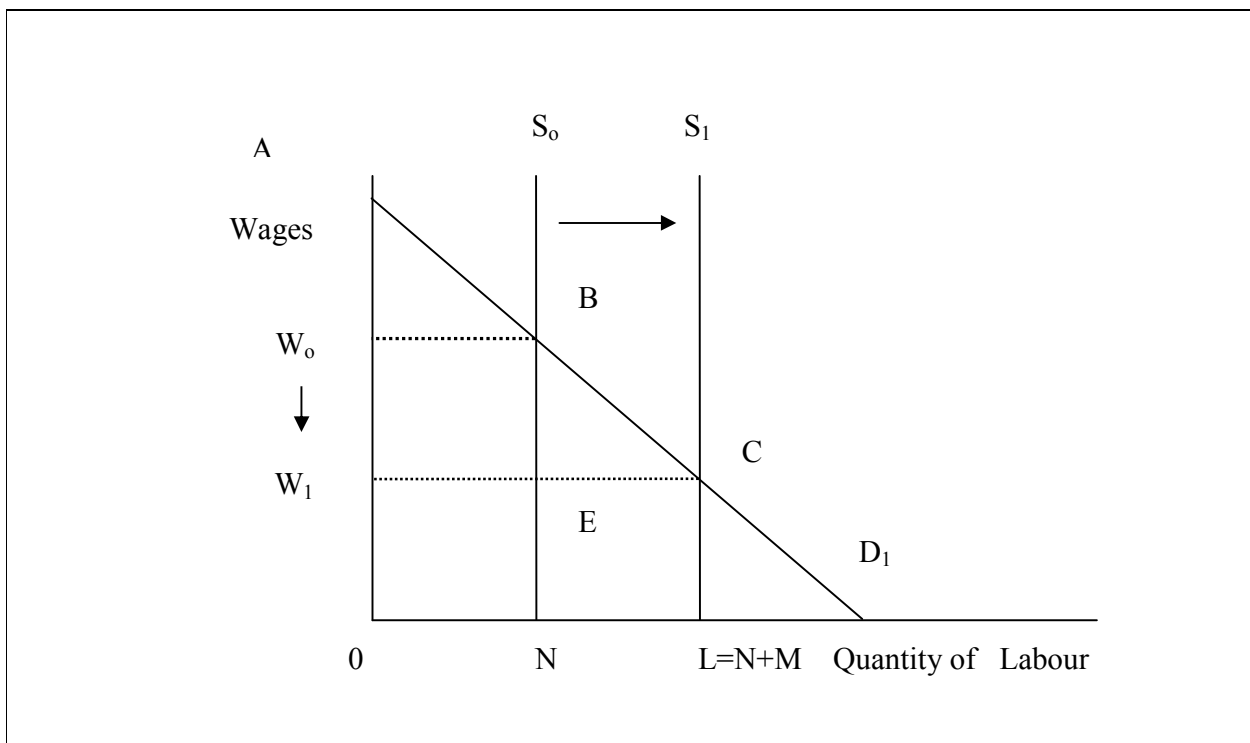
##### **3.2.1 Neoclassical Model**

The neoclassical model assumes that there are two factors of production, labour (L) and capital (K) that are used to produce output (Q). Thus;  $Q=f(K, L)$ . The labour component is further divided into immigrants (M) and natives (N). The theory is built on the assumption that, immigrants and native workers are perfectly substitutable in the labour market. The other assumption is that, the supply of the two inputs, labour (native and immigrant workers) and capital is perfectly inelastic.

According to this theory, immigrants affect the labour market outcomes of the host country. Before immigration, the economy is in equilibrium where marginal costs (wages and interest rates) are equal to the marginal product.

Entry of immigrants increases labour supply, which in turn lowers the labour market wage. When immigrants enter a labour market with an inelastic labour supply curve, supply of labour will increase and as a result wages for all or native workers will decrease. Part of the income that is produced is redistributed to immigrants. In the neoclassical case, migrants depress wages in the host country. This can be explained by Figure 3.1;

**Figure 3.1 Equilibrium in the Labour Market**



Adapted: Hanson, (2001).

In the diagram above, the y-axis plots wages and the x-axis plots quantity of labour. S plots labour supply which is perfectly inelastic and D plots labour demand. The labour market is at equilibrium at point B, with a market equilibrium wage of  $W_0$  and quantity of labour  $N$ . When immigrants enter the labour market they increase labour supply from  $S_0$  to  $S_1$  thus, leading to a rightward shift of the labour supply curve. The new labour supply curve becomes  $S_1$ . It consists of immigrants and natives. The quantity of labour increases from  $N$  to  $L$ . The competitive pressure on the labour market leads the wage to decline from  $W_0$  to  $W_1$ . Thus, immigrants increase quantity of labour supplied and also depress wages in host country's labour market.

Triangle BCE represents income re-allocated from employees to employers. When wages decline firms maximize profits.

The main weakness of this theory is that it assumes perfect competition. In the real world perfect competition is limited. The model also assumes that foreign and local labours are perfect substitutes. In reality, there is no smooth substitution between the two. The theory only looks at the supply side of labour. It does not consider the effect of immigrants on labour demand. Demand for labour is output driven. An increase in the demand for output by immigrants can actually increase demand for labour thus, increasing employment opportunities for both natives and immigrants. Immigrants can actually affect both supply and demand for labour. Wages are sticky downwards they can not always adjust to changes in supply and demand for labour. The presence of workers' unions also prevents wages from going down. As a result the labour market may not always adjust to equilibrium. When labour supply increases more than demand unemployment persists.

### **3.2.2 The Area Analysis Model**

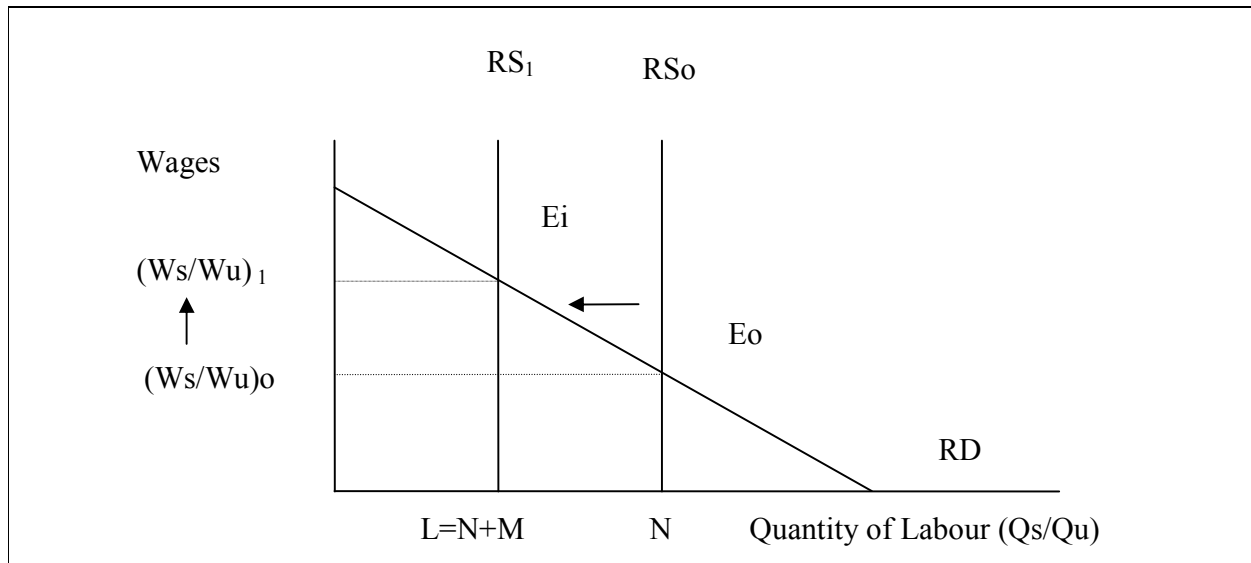
The other theory on the impact of labour immigration is the Area Analysis theory. The theory discusses the impact of labour immigrants on the receiving communities. According to this theory immigrants affect labour market outcomes of the receiving areas.

The Area Analysis theory is built on two assumptions that is;

- There is one aggregate output sector in the economy.
- Labour markets in a country can be segmented according to geographical regions.

The assumption that labour markets are segmented only applies in the short run. In the long run natives and immigrants may move to other labour markets. The equilibrium wages for labour markets differ as they are determined by the interaction of supply and demand for labour in each geographical area. If there is no internal mobility of labour in the country then migrants affect wages of the labour market in the receiving communities. The impact of immigrants on the local labour market can be illustrated using Figure 3.2;

**Figure 3.2 Labour Market Equilibrium**



Adapted: Hanson, (2001).

In Figure 3.2, s denotes skilled labour and u denotes unskilled labour. RS is the labour supply schedule and RD is the labour demand schedule. The horizontal axis represents labour supply of skilled and unskilled labour in the labour market. The supply of labour (skilled and unskilled) in this case is perfectly inelastic. The vertical axis shows the wages in the local labour market. The labour supply for natives is  $RS_o$  that is, before immigration and the relative wages are  $(W_s/W_u)_o$  at equilibrium point  $E_o$ .

Immigrants enter the local labour market by accepting lower wages thus, increasing their demand by profit maximizing firms. If immigrants have the same skill as natives then they can substitute natives in the labour market. The entry of immigrants affects wages for both immigrants and natives. Unskilled immigrants alter skills composition of the labour force. They increase the marginal productivity of skilled labour and reduce the marginal productivity of unskilled labour. Labour migrants increase wages for skilled and reduce wages for unskilled labour.

The immigration of large numbers of unskilled labour reduces the proportion of skilled to unskilled labour in the labour importing country. The proportion of skilled to unskilled labour  $(Q_s/Q_u)$  decreases, shifting labour supply backwards to  $RS_1$  at equilibrium point  $E_i$ . As a result



relative wages  $(W_s/W_u)_0$  increases to  $(W_s/W_u)_1$ . The increase in supply of unskilled labour widens the wage gap between skilled and unskilled labour. Employment decreases from  $N$  to  $L$  which is a combination of immigrants and natives. In the process some natives lose their jobs and therefore unemployment increases.

The main limitation of this theory is its assumption that immigrants affect receiving communities. Native internal labour movements, which may occur due to international immigration, may equalise labour market outcomes in the whole country. Labour supply changes even during migration periods, may be due to other factors (such as education of natives). The equilibrium wages may at times change as a result of a shift of relative labour supply but not labour supply of immigrants.

The theory can only be applicable in the short run. In the long run reduction in information and transportation costs can trigger internal labour movements for both natives and immigrant workers.

### **3.2.3 Heckscher-Ohlin Model**

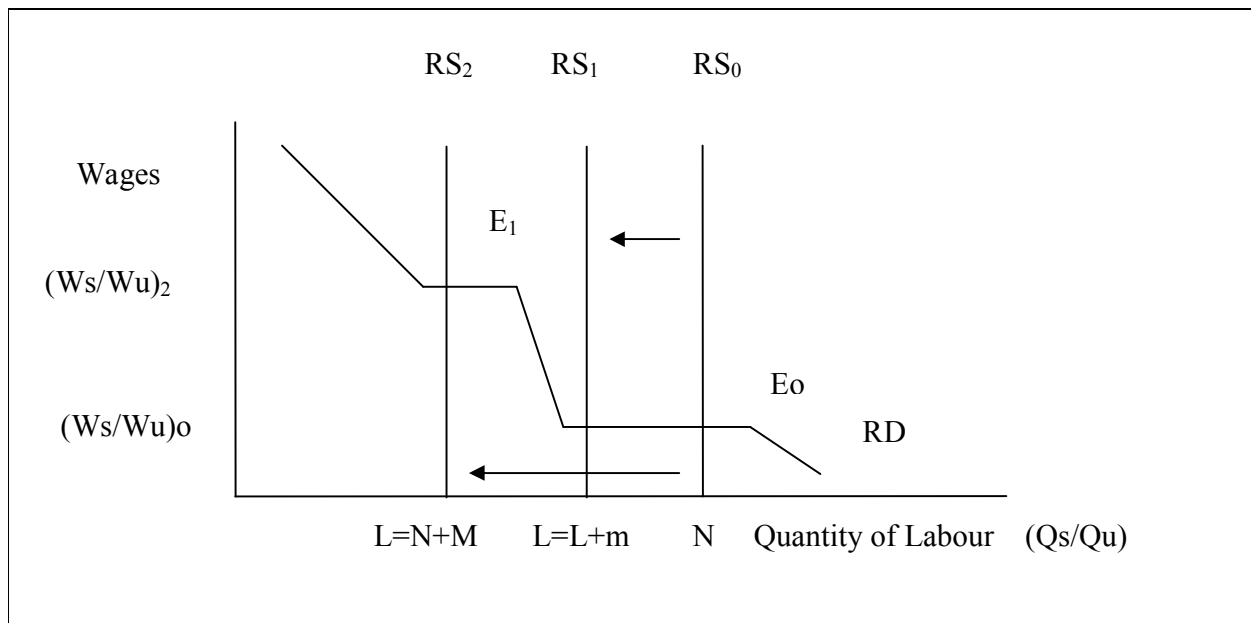
The Heckscher-Ohlin also looks at the impact of immigrants on the labour market. According to the Heckscher-Ohlin model commodities differ in their factor intensities and countries differ in their factor endowments. The model assumes one employer. At equilibrium a country chooses output combinations that maximise national income subject to world product prices, national input supplies and technology. National wages are determined by technology and world prices for each sector of production.

According to the model, the effect of immigrants on wages depends on a number of factors and these include product mix, immigration shock and the size of the country. The effect of immigration shocks on wages depends on the size of the country. When a country is small, immigrants do not change world prices therefore wages are not affected. Immigrants in a small country increase output. The factors of production are insensitive to small immigration shocks in a small country. When a country is large, world prices change due to an immigration shock and also wages change too. In the case of large country immigration reduces the relative price of less

skilled labour intensive goods and raises relative price of skilled labour intensive products. As a result wages of skilled workers rise and wages for unskilled labour fall.

Output increases in less skill intensive sectors and decreases in skill intensive sectors. Large immigration shocks change national wages by inducing a country to produce a different set of commodities which will alter world prices and technology thus, changing wages. Large immigration shocks change wages for both small and large countries thus, widening wage gap between skilled and unskilled labour. The effect of immigration shocks on wages can be illustrated using Figure 3.3;

**Figure 3.3 Labour Market Equilibrium**



Adapted: Hanson, (2001).

In Figure 3.3 *s* signifies skilled labour and *u* depicts unskilled labour. The RS schedule represents relative labour supply and RD represents relative labour demand. Labour supply is perfectly inelastic. Labour demand has two perfectly elastic portions where quantity of output changes leading to an increase in demand for labour. Absorption of labour in the two elastic portions differs from that of other portions. The country's output varies along the demand schedule. There are two different products on each elastic part, therefore giving different relative wages on each elastic part. The country produces one product on the downward sloping demand

function. This makes it impossible to change the output mix. Immigrants therefore enter the labour market by changing relative wages.

The country's labour market is at equilibrium at  $E_0$  before immigration, with labour supply  $RS_0$  and relative wages  $(W_s/W_u)_0$ . Figure 3.3 shows the effect of immigration shocks (large and small) on the labour market. Small immigration shocks shifts labour supply from  $RS_0$  to  $RS_1$  as a result wages do not change (as explained by Rybczynski's output mix effects). The proportion of skilled to unskilled labour declines. A larger immigration shock shifts labour supply from  $RS_0$  to  $RS_2$ . This induces the country to produce a new set of products. The proportion of wages for skilled to unskilled labour increases from  $(W_s/W_u)_0$  to  $(W_s/W_u)_2$ .

A large immigration shock reduces the proportion of skilled to unskilled labour. This leads the labour supply curves to shift backwards from  $RS_0$  to  $RS_2$ . This therefore leads to an increase in the proportion of wages for skilled labour compared to those of unskilled workers. The large immigration shock widens the wage gap between wages for skilled and unskilled labour. Employment declines as wages rise to a higher wages. Some people lose their jobs during the process and unemployment increases since labour demand shifts from that of unskilled to that of skilled labour.

The Heckscher-Ohlin theorem assumes that immigrants may alter labour demand by affecting output mix. In reality, labour demand may shift due to other reasons even during times of immigration, for example technology. Skill biased technology may shift demand for labour from less skilled labour to more skilled labour demand.

## **Summary**

The Area Analysis, Heckscher-Ohlin and the Neoclassical models use different concepts and assumptions to explain the impact of immigration on the labour market. The effect of immigrants on wages is discussed in all the models and all agree that immigration depresses wages for natives in the host country. The Heckscher-Ohlin model goes on to describe the response of output to immigration. Immigrants increase employment opportunities for themselves and also

for natives too. Since demand for labour is output driven an increase in demand for output will increase demand for labour. The Neoclassical model also focuses on the effect of immigrants on employment of natives. According to the neoclassical model natives and immigrants are perfect substitutes, as a result they compete with each other on the labour market. Immigrants therefore displace natives in the labour market. The Area Analysis theory also assumes migrants depress wages and lessen unemployment opportunities of unskilled labour but, on the other hand, increases wages for skilled labour.

### **3.3 Empirical Literature**

Literature is abundant, with studies on the impact of migration on wages and employment in the receiving country. This section analyses international and national migration studies to shed some light on variables that have been empirically found to have an impact on the labour market. A large body of evidence comes from developed countries and African literature is scarce. In particular, there are a few studies that have been done to find the labour market impact of immigrants in the South African context.

Empirical literature can be categorized in a number of ways. That is categorisation by country (developed and developing), variable (wages and employment) and also by type of analysis (survey and econometric studies). The literature review in this section follows the latter categorization. The econometric studies include studies that used time series, cross sectional and multidimensional panel data.

#### **3.3.1 Econometrics Studies**

Literature that used econometric modeling include Glitz, (2006); Friedberg, (1997); Hatton and Tani (2005) and Johnson, (1980); among others.

Glitz, (2006) used an OLS model to find the impact of labour immigrants on the German labour market. The study used a natural experiment to find the impact of immigrants on wages, population and employment of natives in the host country. The OLS model was applied on time series data as from 1996-2001. The study was based on 112 labour market regions which

implemented the Assigned Place of Residence Act and 148 West German regions. The study found a displacement effect of around 4 unemployed resident workers for every 10 immigrants that find a job. In this case labour immigrants fill positions that were supposed to be taken by native workers. Immigrants therefore displace natives in the labour market and unemployment of native workers increases. The German displacement effect is then 0.4. For every 10 immigrants who get employed 4 of them take jobs that were supposed to be taken by natives and 6 fill new positions.

Migrant workers crowd out native workers with the same skill in the host country's labour market. Since immigrants are preferred by employers, especially in the production of less skill intensive goods, they displace natives in the host country's labour market. As a result immigrants can be blamed for the rise in the unemployment levels of a labour importing country. The findings by this study are compatible with economic theory.

The study also found that immigrants have an effect on native's wages. A 10% increase in skill share leads to a 0.49% to 0.58% decrease in relative wages. The effect of immigrants on local wages was found to be negative. Economic theory says an increase in labour supply leads to a fall in wages in order for full employment to be maintained.

Friedberg, (1997) used an OLS model to find the impact of mass migration on the Israeli labour market. The study regressed immigration against wages and employment. It was found that migrants increased the labour force by 12% during the 90s. The study found that migrants from Russia did not have an effect on wages and employment prospects of Israeli natives. However, immigrants had a larger impact on low wage occupation and contract employment. The study found that the effect of immigrants is high on unskilled workers. Migrants increase labour supply and an increase in labour supply depresses wages if full employment is to be maintained. An increase in labour supply in an economy that does not generate enough jobs to meet the labour supply growth, then unemployment worsens. As a result migrants worsen labour market conditions of a labour importing country.

The main advantage of this study is that the country has a single labour market. Internal labour movements due to immigration may not occur since the country has one labour market. The results obtained from this study may give a true picture of the labour market impact of immigrants in Israeli. Impact of immigrants on the host country's labour market are reduced when there is internal labour movement within the country because labour will move from migrant concentrated to others areas in the country.

A study by Venturini and Villisio (2004), in Italy estimated an OLS model to find the effect of labour immigration on the host country's labour market using data from 1993-1997. The study found that a 1% increase in the share of immigrants will lead to a 0.4% decrease in employment opportunities for natives. The study found that labour migrants have negative effects on employment of the unemployed young people without work experience, the effect becomes positive and insignificant in the later years. The study concludes that immigrants crowd out less skilled natives in the short run, but in the long run, their effect becomes insignificant. In the long run natives invest in education and training and they become equipped with skills so that they are not out competed by immigrants. This study used a small sample size. As a result a clear picture of the labour market impact of immigrants can not be found.

Manacorda *et al* (2006), used an OLS model to find the impact of immigration on male wages in the U.K using data from 1975-2005. This study intended to find the impact of immigration on skills composition and wages. In the long run, immigrants overtake natives in terms of investment in education and training. It was found that between 1975 and 2005 native university graduates increased from 6%-21.6% and immigrants university graduates increased from 9.9% to 40.4%. The study found that migrants widen wage inequality between skilled and unskilled labour force in the country that is, a 10% increase in immigration will increase the wage gap between skilled and unskilled natives by 2%. Immigrants are usually highly skilled compared to natives and even those who migrate without any skill when they enter the country invest in education and training more than natives.

The study by Euwals *et al* (2007), used Blinder-Oxaca decomposition criteria to compare the labour market impact of Turkish immigrants in German and Netherlands. This study used an

econometric model to find the impact of immigrants on wages and employment of natives. Turkish immigrants were less likely to find employment than natives and the employment gap was large in Netherlands than German. The study found that, Turkish immigrants in Netherlands have a negative impact on employment rates and tenured job rates. In Germany, it was found that Turkish immigrants had a negative impact on job prestige.

The study by Longhi *et al* (2006), used meta analysis regression to find the impact of immigration on the employment of natives in the U.K. The study found that a 1% increase in immigrants led to a 0.024% decline in native employment opportunities. According to this study, the impact of immigrants is larger on female employment compared to males. Migrants compete with natives in the labour market and displace them. As a result unemployment persists during times of high unemployment.

The main limitation of this study is that it applied the area approach analysis. Thus, the research is too narrow and, therefore, fails to give a clear picture of the labour market impact of immigrants. The data for this study is also limited, thus, can not enable a clear comparison and explanation of the variations.

Peracchi and Depalo (2006), estimated an OLS model to find the labour market impact of immigrants in the Western Europe. The study focused on persons aged between 20-64. The study found that in Italy and Spain more men were employed than women and Ireland, Italy, Spain and Portugal more women are employed than men and natives have higher employment rates than immigrants. The employment gap between men and women is larger for immigrants than for natives. Male migrants prefer part time employment than their counterparts. Male immigrants also prefer self employment. Self employment was found to be more important among men than women for natives and immigrants.

In Canada a study done by Islam, (2003) estimated a VAR model to analyse the labour market impact of immigration on the labour market. The study used immigration, unemployment, real wages and GDP to find the impact of immigrants on the host country's labour market. The main

aim of the study was to find the level of substitutability and complementarities between natives and immigrants.

The study found that immigrants create employment in the labour market by increasing demand for output. Demand for labour is output driven thus, an increase in demand for output may increase demand for labour. As a result immigrants increase employment opportunities for natives in the labour market. The Hicksian wage elasticity was found to be 0.16 which means a 10% increase in immigrants will lead to a 1.6% fall in native wages. Old immigrants were found to have a lesser impact on native wages than new immigrants since new immigrants are usually less skilled and they compete with low skilled natives in the labour market and, as a result, increase labour supply. An increase in labour supply depresses wages in the host country's labour market. Older immigrants would have invested in education and training and therefore equipped themselves with skills. Their impact on wages becomes lesser.

It was also noted that the effect of immigrants depends on the stages of the business cycle, thus, during recessionary periods entry of immigrants may increase unemployment. When an economy is going down immigrants increase unemployment since the host country's economy will not be able to absorb growing labour force, so immigrants and natives substitute each other in the labour market. During economic boom immigrants can increase employment as they increase demand for output and then demand for labour increases. The impact of immigrants on the labour market depends on the strength of supply and demand of immigrant labour and the adjustment strategy of these forces. When demand for labour is high then their displacement effect is low and on the other hand when demand for labour is low then their displacement effect becomes high. The study concluded that immigrants do not increase unemployment but create employment.

Aydemir and Borjas (2006), used an OLS model to compare international migration between Canada, Mexico and the U.S. The study used time series data as from 1986-2001. According to this study, in Canada a 10% increase in migration increases labour supply. An increase in labour supply reduces annual earnings by 3.9%. The U.S labour market is more sensitive to immigration changes than the Canadian labour market. In the U.S, a 10% increase in immigration reduces



earnings by 6.2%. The U.S earnings are more sensitive to changes in immigration levels than Canada. In Mexico the study found a positive relationship between monthly earnings and immigration. A 10% decrease in labour supply due to immigration leads to a 5.6% increase in monthly earnings.

The effect of labour migrants entering these countries may depend on a number of factors such as type of migrants (skilled or unskilled), stage of a business cycle of a host country, and demand for migrant workers. It may be the case that the periods between 1986 to 2001 were the times of economic booms in some countries and a recessionary period for the other country. As a result labour market impact of immigrants will differ.

Taylor, (1995) in Argentina used an OLS model to find the impact of labour immigrants on the country's economy. This study used an OLS model to find the impact of immigrants on labour force and GDP. The general equilibrium analysis was applied to find the impact of immigrants on the country's economy. According to the study immigrants increased labour force by 43% and also the country's GDP grew by 19%. The study found that immigrants increase labour supply in the host country's labour market. A positive relationship was also found between immigrants and GDP. When human capital of immigrants exceeds the physical capital dilution of a host country then the country's economy grows.

In German Pischke and Velling (1997), employed an OLS model to find the impact of immigrants on the labour market. The study used data for 328 West German counties from 1985-1989. The labour markets were divided into 167 labour markets. The study examined immigration against unemployment, wages, share of foreign labour force and population. Little evidence was found on the impact of immigrants on the host country's unemployment. The study concluded that the displacement effect of immigrants is low. However, the main problem of this study is that it analysed the migrants' impact during the country's boom period, when the economy was creating jobs. Immigrants therefore filled in positions that existed in the labour market.

The study does not take into consideration the effect of internal migration of natives. In addition, the analysis of immigration impact on receiving communities may not give a true picture of the impact of immigrants on the host country's labour market. Emigration of natives from immigrants' concentration zones may equalize labour market conditions of the entire economy. Furthermore, as the numbers of observations were small, the study had problems with the degrees of freedom. The time frame under consideration is very short and therefore can not be relied on for giving a true reflection of labour market impact of immigrants.

The study done in China by Zhang, (2003) to analyse labour migration and wage inequality used an OLS model. An OLS model was used in this study to find the impact of immigrants on GDP. The study assumed that output is produced by white collar and blue collar workers. Thus, there is imperfect substitution between white collar and blue collar workers. The elasticities of blue collar and white collar workers are different. For example, a 1% increase in the number of skilled workers will lead to a 2% increase in output but a 1% increase in number of unskilled workers will lead to a 1% increase in output. An increase in skilled labour force led to increased returns to scale but an increase in unskilled labour lead to constant returns to scale. Immigrants usually hold blue collar jobs. An increase in immigrants reduces marginal productivity for unskilled labour, thus reducing wages for unskilled labour.

The major limitation of this study is that it only considers the negative impact of immigrants. Immigrants might have positive consequences in the labour market of the host country. Immigrants usually target thriving communities and as a result, they may have positive labour market outcomes such as increasing employment and wages. Reliability of data for this study was also a major problem as there was no continuous time series data for robust tests.

Bohn and Sanders (2006), estimated an OLS model to find the labour market effect of immigrants in Canada using data from 1980-2000. The analysis was based on males between 18-64years. The study regressed migration against wages, education and labour market experience. The study used a fixed effects model on time series data. According to this study, immigrants displace natives and also depress wages in the host country's labour market. A small negative and statistically insignificant effect was found between immigrants share and native wages.

Dustmann *et al* (2005), used an OLS model to find the impact of migrant labour in the U.K's labour market. The study estimated time series data. According to the study an increase in immigrant population by 1% leads to a 0.17% increase in unemployment. The immigrants' effect on unemployment was moderate. According to the study, there is little evidence that past or more recent immigrants altered the composition of the labour market in the host country. The effect of immigrants on native semi-skilled workers was found to be negative and significant.

An increase in immigrant population increased wages for skilled workers. Immigrants were found to have a negative impact on labour market outcomes for the unskilled and positive labour market outcomes for the skilled workers. Thus, they reduced wages and employment opportunities for the unskilled and increased wages and employment opportunities for the skilled workers. A model which removes fixed effects was estimated, thus eliminating the possibility of getting biased positive and negative statistical correlation between immigrant concentration and economic outcomes. The study also used the instrumental variables regression so as to get rid of attenuation bias and also to get a clear cut direction between immigration inflows and labour market outcomes. The study also made use of lagged values so as to avoid getting biased results which will occur due to internal migrant outflows.

The study also found a slight positive relationship between employment and immigrant native population. The findings of this study are consistent with empirical results from other studies.

The main weakness of the study is that the number of observations for data is small for econometric modeling. A small sample size is a challenge to statistical analysis. A small sample tends to be biased. The chances of missing key factors are high. The variables are also likely to suffer from cointegration.

In Netherlands, Rodenburg *et al* (2003), employed an OLS model to find the impact of immigrants on the labour market. The study used an econometric model to find the impact of immigrants on GDP and wages. The study assumed the production function consists of two factors that is, labour and capital. The factors of production were also assumed to be perfectly

inelastic. According to this study, immigrants reduce low skilled natives' wages. The study also found that immigrants increase the host country's GDP.

The study done by Parasnis *et al* (2002), estimated an OLS model to find the impact of immigrants on native workers' employment prospects in the Australian labour market. The study used data from 1981-2001 for men aged between 18-64. The study estimated the following model;

$$Y_{i,j,t} = \theta P_{i,j,t} + S_i + \chi_j + \pi_t + (S_i * \chi_j) + (\chi_j * \pi_t) + \theta_{j,i,t}$$

Where  $Y_{i,j,t}$  is the labour market outcome for native men who have;

- education  $i$  ( $i=1, \dots, 5$ ),
- experience  $j$  ( $j=1, \dots, 9$ ),
- time  $t$  ( $t=1981, 1986, 1991, 1996$  and  $2001$ ),
- $S_i$  is a vector of fixed effects indicating the group's educational attainment,
- $\chi_j$  is a vector of fixed effects indicating the group's work experience,
- $\pi_t$  is a vector of fixed effects indicating the time period.

According to the study,  $\partial \log W_{i,t,j} / \partial M_{i,j,t} = \theta / (1 + M_{i,j,t})^2$

Where  $M_{i,j,t} = M_{i,j,t} / N_{i,j,t}$  is the percentage increase in labour supply due to migrants of skill group ( $i, j, t$ ).

The elasticity of labour supply was found to be 0.37 and 0.16 for hours worked and 0.37 for income. Thus, a 10% increase in immigrants will increase hours worked by 1.6%, labour supply by 3.7% and wages by 3.7%. Immigrants were found to have positive labour market outcomes.

Addison and Worwick (2002), estimated a cross sectional model to analyse the labour market impact of immigrants on the Australian labour market from 1982-1996. An econometric model was estimated to find the impact of immigrants on wages. The study found a wage elasticity of

0.121. A 10% increase in immigrants led to a 1.2% increase in native wages. A positive relationship was found between immigrants and wages.

Goldiner and Paserman (2004), employed an OLS model to find the labour market impact of immigrants in Israeli. The study used time series data from 1989-1999. The study found that immigrants affect wages for native men and women in the short run but in the long run, the effect becomes insignificant. Thus, a 10% increase in immigrants share leads to a less than 3% decrease in native wages in the short run. Thus, immigrants have negative labour market outcomes in the short run but, in the long run, the impact may become positive.

In Australia Pope and Withers (1993), employed a two stage least squares model on data from 1861 to 1991 to find the impact of immigrants on the labour market. The study used the following variables; unemployment rate, net migration, migrant quality (measured by human capital, savings and consumption potential), nominal wage, capacity utilisation rate (actual relative to real GDP), unemployment benefits, change in industrial structure of employment (measured by stoikov index), price deflator, degree of unionization of labour force and real transport.

The period under study was divided into three sub periods based on historical backgrounds that is,

- pre-federation era (1861-1901),
- post federation era towards war two (1902-1945),

And modern post war era (1903-1991).

It was found that immigrants do not increase unemployment in the host country's labour market but, instead they create niches and fill them. According to this study, changes in unemployment after World War Two were due to other factors other than migration. A rise in the unemployment rate, for example, was due to unemployment benefits and capacity under utilization. In addition, productivity affected the behavior of wages in all periods. This study concludes that migrants have no impact on labour market outcomes of a host country.

Yomogida and Zhao (2005), used an OLS model to find the impact of immigrants on skilled and unskilled labour in Japan. The study used a Ricardo-Viner model to find the labour market impact of immigration on employment and wages. A Leontief type of production technology was assumed thus, output was assumed to be produced by a combination of capital and labour.

According to the study, the impact of immigration on a country's labour market depends on the size of the migration wave. When the immigration volume is small then adjustment costs become less than efficiency gains and thus, wages for unskilled labour will rise. This narrows the wage inequality gap between White collar and Blue collar workers. On the hand, when the migration volumes are large, wages for unskilled labour will fall and wages for skilled labour will rise. As a result the wage gap between skilled and unskilled labour widens.

Hatton and Tani (2005), investigated the impact of immigration on 11 UK regions using panel regression on time series data as from 1982-2000. The study investigated the effect of immigration on unemployment and wages using a simple perfectly competitive model of labour supply and demand. This study found that an increase of 100 in net migration to a region from abroad generates a net out labour migration to other regions of about 35. According to this study international migrants led to internal labour movements. That is, natives tend to emigrate from migrants concentration zones to other labour markets within the country. Internal labour movements equalize labour market conditions in the whole country.

The findings of this study are realistic since over crowding of labour in one labour market may lead to internal labour movements to other labour markets. Thus, immigrants' impact on the labour market may not only be felt in gateway communities but in the entire country the effect might be insignificant due to its spread through out the country.

A large body of evidence on the labour market impact of immigration is from the U.S. Research done in the U.S has different findings and conclusions, thus some researchers found that immigration has an insignificant impact on the labour market outcomes while others found a significant impact on wages and employment.

The study by Meyer and Fairle (2000), estimated a two stage probit model in the U.S to examine the impact of immigrants on native self employment. An econometric model was estimated on time series data as from 1980-1990. This study used an OLS model to find the impact of immigrants on wages and employment across 132 largest metropolitan cities. This study analysed the impact of immigrants on self employment of all natives (Blacks and non-Blacks) focusing on individuals between ages of 16-64. The first stage probit regression used data from 1980-1990 and the second stage linear regression of the estimates of the first difference fixed effects from 1980-1990.

The second stage regression made use of Generalized Least Squares (GLS) estimates. The results from the first model suggest that immigrants displace self employed natives in the host country's labour market. The results from the GLS estimates show that there is a positive relationship between immigration and earnings. Earnings for self employed natives increase by 9-13% for men and 6-10% for women.

Immigration increases the probability of self employment among natives. An additional immigrant increases self employment of native men by 0.4-1.37% and 0.18-0.23% increase in self employment of native women. The study found that immigrants have a significant impact on the probability of self employment of non Black natives. Between 1980 and 1990 businesses increased by 720 000 and 1 116 000 for native born men and native born women respectively.

The main advantage of the model used by the study is that it controls individual level characteristics and also unobserved metropolitan area characteristics. Thus, results from this study are less likely to be biased. On the other hand, the main disadvantage of the study is that the coefficient for earnings has an unexpected sign. The sign was supposed to be negative and it came out positive thus, suggesting a positive relationship between immigration and earnings. This relationship is possible for highly skilled workers. The study also used a self employment ratio instead of self employment rate thus, overestimating the self employment figures as the self employment ratio might include people displaced from self employment.

Johnson, (1980) in the U.S employed an econometric model to find the labour market impact of immigration on the U.S labour market. The study used an OLS model to find the effect of each additional immigrant on employment, population, Gross National Product and income. According to the study the labour force is divided into skilled and unskilled labour. Immigrants increase the unskilled labour force and the unskilled labour force includes unskilled natives and immigrants. Immigrants compete with natives in the labour market.

According to the study total employment includes natives and immigrants thus,

$$E_1 = E_{1D} + E_{1m}$$

Where  $E_1$  is total employment,

$E_{1D}$  are native workers,

And  $E_{1m}$  represents immigrant workers.

The displacement of immigrants on skilled workers is;

$$\beta = - \partial E_{1D} / \partial E_{1m}$$

The immigrants compete with unskilled natives thus, displacing them in the labour market.  $\beta$  measures the displacement effect of immigrants. If  $\beta=1$  there is complete displacement and if  $\beta=0$  there is no displacement. The effect of immigrants on native employment depends on the labour market conditions. If demand for labour is high then, immigrants fill positions that exist in the labour market but if demand for labour is low then immigrants displace natives. The study found that immigrants displace low skilled natives in the country's labour market.

Wages are fixed in the short run and as a result they do not respond to changes in supply and demand for labour. Immigrants therefore increase labour supply and this leads to unemployment. In the long run immigrants lower wages which leads to frictional unemployment. Ultimately, wages respond to fluctuations in labour supply and demand thus, the increase in labour supply depresses wages and frictional unemployment will persist.

The same study finds a positive relationship between immigrants and GDP. Immigrants come as consumers and as a result they increase consumption of goods and services in the host country's



economy and therefore boosts economic growth. Increase in employment of immigrants increase the country's GDP. Employment effects of increased immigration are based on the assumption that factors of production (skilled labour and capital) are fully employed and inelastically supplied. Based on the assumption that includes factors such as labour (skilled and unskilled) and capital the study derived the following production function;

$$Y = W_1 E_{1D} + W_1 E_{1m} + W_2 E_2 + vK$$

Where  $Y$  is output,

$W_1$  is wage for unskilled labour,

$E_{1D}$  is employment of unskilled natives,

$E_{1m}$  is immigrant labour,

$W_2$  is wages for skilled labour,

$E_2$  employment of skilled workers,

$v$  is interest,

And  $K$  is capital.

Output is produced using labour (that is immigrant labour, unskilled natives and skilled natives) and capital. Increase in employment of immigrant labour increases the country's output. The increase in GNP due to one additional employed immigrant increases output by  $W_1$  which is the earnings of the new immigrant and also they cause a slight decrease in  $W_1$  and a slight increase in  $W_2$  and  $v$ .

The study also found that increase in GNP due to additional employed immigrants is equal to  $W_1$  times  $1-\beta$ .

-where  $W_1$  is the real wage for unskilled labour.

$-\beta$  is the displacement effect of immigrants.

Thus, the study concluded that an increase in employment of immigrants by one will increase the country's GNP by  $(1-\beta) W_1$ .

Therefore  $\partial y / \partial E_{1M} = (1-\beta) W_1$ .

An increase in GNP increases employment opportunities for immigrants and natives since labour demand is output driven.

The main weakness of this study is that it assumes perfect substitution between immigrants and natives in the host country's labour market. This assumption is not realistic. Immigrants may have difficulties in finding employment in a foreign labour market since their skills may not match the requirements of the host country's labour market and also due to language differences. As a result smooth substitution of migrants and natives may not exist.

The study by Grossman, (1982) estimated an OLS model in the U.S to find the substitutability between natives and immigrants in production. The study used cross sectional data to find the substitutability of immigrants and natives in production using the Hicks' elasticity of complementarities. According to this study output is produced by a combination of native workers, migrant labour and capital. Capital is the complementary factor. The degree of complementarity is high in the case of immigrant workers (as they are less educated) than the case of native workers.

According to the study, an increase in the number of immigrants has an insignificant effect on native wages. It was noted that, a 1% increase in the number of immigrants reduces wages for the second generation immigrants by 0.03% and reduce wages for natives by 0.02%. A 10% increase in illegal immigrants reduces native employment by 0.08%.

Borjas, (2006) employed an OLS model on time series data in the U.S to find the impact of immigration on the country's labour market. The study uses data from 1960-2000. The study found that immigration increased workers by 10% in each skill group and thus, reducing wages for native workers of that same skill group by 3.5%. Immigrants reduce wages of native workers with the same skill but different work experience by 0.7% and increase wages of natives with different skill by 0.5%. Thus, immigrants had a larger impact on wages for high school drop outs compared to college graduates. Evidence from the U.S show that immigrants reduced wages for unskilled Blacks and Hispanics by a larger proportion compared to unskilled Whites workers.

In general, immigrants reduce wages for all workers in the short run and in the long run the effect depends on skill and ethnic group. According to the study immigration changes the terms of trade of the host country and, as a result, affecting incomes accruing to workers, firms and native population.

In the U.S the effect of immigrants on employment and wages in the host country is insignificant as evidenced by Friedburg and Hunt (1995). The study used an OLS model to find the labour market impact of immigration in the U.S. According to the study a 1% increase in immigrant labour reduces unemployment rate by 0.23% and wages for unskilled labour by 1.2%.

The study used a Solow growth model to find the impact of immigration on economic growth. According to the study economic growth is a function of human capital (mobile) and physical capital (immobile). The study found that a 1% increase in immigration will lead to a 0.1% increase in economic growth. Immigrants may create jobs in the labour market. Demand for labour is output driven. An increase in demand for output creates employment.

The main advantage of this study is that it has also focused on the impact of immigrants on economic growth. Most labour economists have paid attention on the impact of immigrants on employment and wages thus, assuming constant returns to scale, but this study assumes increasing returns to scale which may occur due to immigration. The focus on economic growth is important to a labour economist as it has spillover effects on the labour market outcomes. Demand for labour is output driven, thus; positive economic growth which may occur due to immigration may create employment in the economy and reduce unemployment levels and increase wages for both natives and immigrants.

The study by Card, (2001) used an OLS model to find the impact of labour migration on the U.S labour market. The study used data for age groups between 16 and 65. 175 largest cities in the U.S were surveyed. The study found the following;

- 14% of adult population in large cities was foreign.
- Immigrants have 1-2 years less education than natives.

- Recent immigrants tend to be younger than natives and second generation natives.

According to this study a 10% increase in the number of immigrants of a certain group is associated with 0.05% decrease in employment of native workers in that occupation group. According to this study, changes in population size were also associated with changes in wages, but elasticity of wages relative to population changes is smaller than the elasticity of employment. A 10% change in population due to labour immigration is associated with less than 3% change in relative wages. The empirical evidence from the U.S is compatible with economic theory. The study found that in the U.S immigrant labour displaces and also depresses wages of native workers in the host country.

The model used by this study assumed a one output good but in reality labour demand is driven by many industries. The results from this model therefore can not be relied upon.

Carmel, (1989) used an OLS model to find the impact of immigration on human capital of natives in the U.S. The study aimed at finding the impact of immigration on GDP, wages, distribution of native labour force by skill and also human capital deepening by natives. According to the study the short run impact of immigrants on earnings for complementary workers is favorable. The effect on earnings depends on the strength and period under consideration. The short run impact of immigration is unfavorable for migrant substitutes. The impact of immigration capital deepening is small on the earnings of natives.

Borjas, (1999) estimated a generic regression model to find the impact of immigrants on the U.S economy. According to this study if the labour market consists of skilled and unskilled labour then output ( $Q$ ) is produced by capital ( $K$ ), skilled labour ( $L_s$ ) and unskilled labour ( $L_u$ ). Thus,

$$Q=f(K,L_s,L_u)=[K,bN+\beta M,(1-b)N+(1-\beta)M]$$

Where  $b$  and  $\beta$  denote the fraction of skilled workers among natives and immigrants respectively,  $N$  represents natives,

$M$  represents immigrants

And  $K$  represents capital.

The study found that, if immigrants have the same skill as natives they do not change the wage but, if immigrants are less skilled than natives, the marginal productivity of skilled workers increases and marginal productivity of unskilled workers declines, thus increasing the wages of skilled and lowering wages of unskilled workers. On the other hand, if immigrants are relatively skilled they ambiguously raise the wages of unskilled labour and reduce wages for skilled labour. The study concluded that the impact of immigrants on wages in the host country depend on the relative skill of immigrants.

The study by Ottiviano and Peri (2006), estimated an OLS model to find the gains from immigration in the U.S. According to this study, a 10% increase in immigrants numbers will lead to a 2% increase in wages for skilled labour. Wages for high school drop outs are depressed due to an increase in immigration. The wages for low skilled labour force decreased by 0.4%. Immigrants reduce marginal productivity for their substitutes and increase marginal productivity for their complements. As a result immigrants depress wages for their substitutes and increase wages for their complements.

The study by Card, (1990) used an OLS model to evaluate the effect of unskilled immigrants on natives' employment prospects. The study tested the area analysis approach in Miami after arrival of Mariel immigrants from Cuba. The study compared the immigrants' impact on areas with high numbers with those with little numbers, thus, concluded that immigrants have an insignificant impact on the host country's labour market outcomes. The study found that Mariel immigrants had no effect on wages for unskilled natives. The immigrants were smoothly absorbed into the country's labour market.

The area chosen by the study had previously been affected by large inflows of immigrants as a result the labour market had already adjusted to inflows of immigrants thus; new immigrants could easily be absorbed into the country's labour market. The economy was well prepared for immigrants since it had been receiving immigrants since two decades before Mariel Boatlift Miam. In such a case immigrants do not have an effect on the labour market outcomes of the host country.

Altonji and Card (1989), estimated an OLS model to find the effects of immigration on the U.S labour market. The study used data from 1970-1980. According to the study, a 1% increase in population due to immigrants reduces wages for unskilled labour by 0.3%. The negative effects of immigration on the labour market are offset by increase in output demand. The displacement effect of immigrants on natives ranges from 0.85-1.25%. Evidence from U.S show that low skilled Black natives are most affected by immigrants than low skilled Whites natives. A positive relationship was found between immigration and wages for skilled native workers.

The main weakness of the study is that it assumes equilibrium in the labour market. This assumption is not realistic. The presence of institutions in the labour market prevent wages from adjusting to changes in labour supply thus, disequilibrium prevails when labour supply increases.

Bean *et al* (1988), estimated a Two Staged Least Squares model in the U.S labour market to analyse the effect of illegal immigrants. The effect of illegal immigrants on wages was found to be negative for male natives and positive for female natives. According to this study a 10% increase in the number of undocumented immigrants will lead to a 0.2% increase in earnings for native females and a 10% increase in illegal immigrants will lead to a 1.7% decrease in male native earnings. The cross elasticity for illegal and legal immigrants is -0.168 and -0.007 respectively. Thus, a 10% increase in illegal immigrants will reduce illegal immigrants' earnings by 1.7% and 0.07% for legal immigrants.

A study by Borjas, (1994) employed a Cross sectional regression model in the U.S to find the manner in which immigrants skills adapted to the requirements of the host country's labour market. The study used data from 1970-1990. The study assumes that the labour market is in a closed economy and output is produced by a linear homogenous production function in a perfectly competitive framework. Both skilled and unskilled labour is used in the production of output. The price of output is equal to the cost of production.

This study observed that, in the short run, immigrants earn 17% less than natives and in the long run they earn 11% more than natives. In the short run immigrants' skills do not match the requirements of the host country's labour market. As a result immigrants earn less than natives.

In the long run, immigrants invest in education and training, as a result their capital stock grows more than that for natives. Immigrants then overtake natives in the labour market. Immigrants' wages grow more than wages for natives. Entry of immigrants into the labour market alters the production function. A change in the production function leads wages for skilled native workers to increase and wages for unskilled native workers to fall. According to the study a 10% increase in immigrants reduces native wages by 0.2%.

In the U.S Borjas, (2003) used an OLS model to find the impact of immigrants on the labour market. The study used data from 1960-2000 for men aged between 18-64. The study found that a 10% increase in the number of immigrant workers in a certain skill group will reduce wages of that same skill group by 4%. The labour market impact of immigrants was most felt by unskilled labour than skilled labour. It was also estimated that an increase in labour supply due to immigration reduced hours of work by 3.7 percentage points.

The study did not take into consideration the effect of secondary adjustments (such as that foreign labour creates its own demand), thus, overstating the impact of immigrants in the host country's labour market.

Winegarden and Khor (1991), in the U.S, estimated a simultaneous equation model on 42 states to establish the relationship between immigration and unemployment of native youth. A positive relationship was found between immigrants numbers and unemployment of natives. A 10% increase in migrant workers of a certain skill group leads to a 1.3% increase in unemployment of native workers with the same skill. Immigrants displace their substitutes in the labour market. The impact of immigrants on unemployment is high for Black natives and small for White natives.

A study done by Eaton, (1998) used an OLS model to find the impact of immigrants on the U.S labour market. The study used data from 1980-1990. The study seeks to explain whether there is a relationship between immigration and labour demand. A positive relationship was found between immigration and population growth. According to the study immigrants create niche positions and fill them in small and medium sized cities. In large cities there was little

relationship between the relative size of immigrant population and the labour market. Thus, immigrants do not displace natives in the labour market.

The main advantage of this study is that it did not assume cities are closed economies. It recognized the presence of internal labour movements between cities. The methodology used also allows for the test of counterfactual arguments, that is, the structure of immigrants job sector when there are few or no immigrants.

However, the main limitation of this study is that it failed to establish the determinants of the proportion of immigrant jobs in large cities. The study also could not analyse the labour market effect of immigrants who do not work in migrant sectors.

A study by Borjas *et al* (2007), estimated a cross sectional regression model to find the impact of immigrants on the U.S labour market using data from 1980-1990. The persons under study were aged between 18-64. The study found that immigrants increased labour supply and as a result they depressed wages for low skilled workers. Immigrants increase labour supply of low skilled labour and they compete with unskilled natives in the labour market thus, reducing marginal productivity for unskilled labour therefore leading to a fall in wages for this group.

Reliability of data was a major problem in this study. The data available did not include the number of all immigrants thus, underestimating illegal immigrants' volumes into the country. Census data used by the study is also not reliable since census education changed between 1980 and 1990. The period chosen may not give a true picture of the impact of immigrants on the country's labour market.

Borjas, (2004) in the U.S used an OLS model to find the effect of increasing the supply of labour through immigration on native born workers used an OLS model. The study used census data from 1960-2000. According to this study an increase in immigration between 1980 and 2000 reduced average annual earnings of native born men by 4%. The impact of immigrants on native workers is high on low skilled workers. The increase in immigrants between 1980 and 2000 reduced wages for unskilled labour force by 7.4%.



Card, (2005) estimated a univariate model to find the impact of immigrants on the U.S economy using data from 1980-2000 across 325 cities. According to the study immigrants increase supply of unskilled labour in host country's labour market. A production function was used to analyse the impact of immigrants on less skilled labour. The study found that immigrants widen wage inequalities between native male high school graduates and native male graduates. An insignificant negative impact of immigrants on employment was also found.

In the U.S Roberto, (1998) estimated an OLS model to find the impact of immigrants on the labour market. The study used data from 1980-1990. The analysis was based on males between the ages of 16 and 64. According to this study, a 10% increase in immigrants share led to a 1.9% decrease in time worked by low skilled workers. A 10% increase in the share of immigrants led to a 0.8% decrease in hours worked by high skilled workers. Thus, immigrants have a high impact on participation for unskilled workers than skilled workers.

Carter and Sutch (2007), used an OLS model to find the impact of immigrants on the U.S labour market. The study assumes a closed economy. Immigrants increase labour supply, as a result they depress native wages in the host country's labour market. The model assumes full employment as a result a fall in wages led to voluntary unemployment. Natives derive disutility from working and thus, withdraw their labour services from the labour market when wages are low.

The main weakness of this study is that it does not consider the effect of immigrants on output. Immigrants increase demand for output, since demand for labour is output driven, an increase in demand for output will lead to an increase in demand for labour. Thus, immigrants can create employment in the host country's labour market.

In conclusion, this brief review of the econometric studies on the impact of immigrants on host country's labour markets, three issues stand out. First, all these studies are in developed countries especially in U.S.A. Secondly, virtually all these studies suggest that immigrants increase the rate of unemployment and depress wages. This is more so in the short run. Thirdly, these studies seem to share some common drawbacks.

The main drawback of econometric studies is on the misspecification of the models used. For example Borjas, (1999) noted that wages adjust due to some factors which were not captured in the model. Some conclusions are based on labour markets with high institutional barriers which therefore prevent labour market adjustments to changes in labour supply. For example, this is evident from studies by Dustmann *et al* (2003), Peracchi and Depalo (2006) and Parasnis *et al* (2002), among others. Some studies were done in flexible labour markets like USA such as Citrin, (2003); Borjas, (2006); Carter and Sutch (2007) and Card, (2005), among others. Most studies estimated OLS models thus; it is likely that estimates can be biased due to existence of outliers. The existence of outliers leads squares estimates to be inefficient.

### **3.3.2 Survey Studies**

Several studies used a survey methodology to investigate the impact of immigrants on the labour market. These studies include surveys done in South Africa, U.S., UK and German, among others.

Maharaj, (2004) used a survey methodology to find the impact of labour migration in the post apartheid South Africa. The study found that illegal aliens are viewed as a cheap source of labour and in their desire to make money, they deprive locals of their job opportunities. Some are paid as little as R300 a month, while others are not paid at all, as they merely work for food and shelter. Small companies employ illegal labour immigrants at slave wages knowing that they are unable to join unions and protect themselves.

The study conducted four surveys between 1993 and 1999. The migration trends between these years might have been different from those of other years. The study chose the period towards the end of apartheid and beginning of the first decade of democracy. Thus, conclusions drawn from this study might not reflect the actual effect of immigration on the country's labour market. This is the period when South Africa was affected by the Asian contagion which led to a reduction of mine production and, as a result, a lot of people were retrenched and migrants were most affected. Rising unemployment and a fall in wages was a result of other factors other than increase in migration volumes. Therefore an empirical study to date, covering the apartheid and

post apartheid era, need to be carried out to establish the effect of labour immigrants in the South African context.

Camarota, (1998) used a survey methodology to find the impact of immigrants on the labour market of California in the U.S.A. The study used data from 1960-1995. It was found that immigrants increased California's population by 12.1% in 1995. The immigrants reduced native wages and reduced employment opportunities for natives. It was found that 200 000 natives were displaced during this period.

Citrin, (2003) conducted interviews to find the public opinion on the impact of immigrants on the U.S labour market. It was found that 40% of the respondents believed immigrants have a negative impact on labour market outcomes of the host country. That is, immigrants displace natives and depress their wages in the host country's labour market. On the other hand, 60% of the natives believe that immigrants fill positions that exist in the labour market. Thus, they solve the problem of labour shortages in the host country. 68% of the respondents believed that immigrants exacerbate crime rate in the host country. The study concluded that 50.4% of the respondents had positive views on the impact of immigrants, for example, cultural environment, new foods, music and employment creation. The negative views include cultural erosion, native displacement and wage depression.

In the U.K Riley, (2006) conducted a survey to find the labour market impact of immigration. The study found that immigrants increase in labour supply in the host country's labour market. Immigrants fill gaps that exist in the labour market thus, solving the problem of labour shortages in the host country. On the other hand, immigrants exert downward pressure on wages. They also increase unemployment as they displace natives and also their skills may not match the host country's labour market requirements thus, they remain unemployed.

In the U.S Holtz-Eakin, (2005) conducted a survey to find the role of immigrants on the labour market. Immigrants accounted for 15% of U.S labour force in 2004 and a majority of them held blue collar jobs. The study found that immigrants reduced unskilled native earnings by 10% in the short run. It was also noted that in the long run a flexible labour market may adjust to

accommodate immigrants by increasing investment thus, increasing employment opportunities for natives and immigrants. They also raise earnings for those who would have invested in education and training.

The study had a problem of finding reliable data as it was obtained from different sources in which information for some factors were not available. The statistics on the proportion of immigrants in the labour force is also unreliable since the method used to estimate the number of illegal immigrants in the labour force is different from the method used to estimate the number of illegal immigrants in the population.

Borjas, (1991) sought to find the effect of labour immigration on the labour market in the U.S using a survey. This survey focused on the effect of labour immigration on population (measure of labour supply), demographic and economic effects of labour immigration. It was noted that native and migrant labours do compete in the labour market. The impact of labour immigration on wages was small, a 10% increase in immigrants numbers reduces wages by 0.2%.

Nasser, (1996) used a survey methodology to find the impact of immigrants on the host country's labour market in the U.S. The study found that between 1995 and 2000, the U.S population increased by 4.5%. According to the study a positive relationship exists between labour immigration and population growth. Immigrants increase the host country's population and thus, labour supply.

Bodvarsson and Van den Berg (2003), in Nebraska conducted interviews to find the impact of immigration on the labour market. According to this study, labour markets are not flexible and immigrants increase unemployment since the labour market can not adjust wages to absorb increasing labour supply. Immigrants do not increase unemployment, they create their own demand for labour. An increase in demand for output has a positive effect on demand for labour. An increase in immigrants may increase wages in destination countries. For example, the arrival of 4000 Hispanics between 1990 and 2000 led to 7.8% increase in the U.S wages. In this case immigration had positive effects on wages in the host country.

The Council of Economic Advisers (2007), conducted a survey to find the economic impact of migrants in the U.S. According to this study, 40% of PHD scientists in the U.S were foreign born. The study found that entrepreneurial activity is nearly 40% higher for immigrants than for natives.

In conclusion survey studies have some general weaknesses. Surveys are generally inflexible as they require a study design that has to remain unchanged through out the data collection. The researcher may get biased results as it may be difficult for the participants to recall some of the information. The data sets used in these surveys are limited for achieving robust estimates. Most of these studies have been done in developed countries thus; they may not explain fully impact of immigration in African labour markets. Only a few studies address this issue in an African context.

Literature reviewed above is from, Italy, German, U.K, U.S, South Africa, Netherlands and Argentina, among others. The findings for the studies above can be summarized in the Table 3.1.

**Table 3.1 Summary of Selected Empirical Findings**

<b>STUDY</b>	<b>PLACE</b>	<b>METHODOLOGY</b>	<b>FINDINGS</b>
Meyer <i>et al</i> (2003)	U.S	Probit Model	-Immigrants increase self employment.
Glitz, (2007)	German	OLS Model	-Immigrants displace natives. -Immigrants depress wages.
Venturini and Villisio(2004)	Italy	OLS Model	-Immigrants displace natives in the short run.
Nasser, (1996)	U.S	Survey	-Immigrants increase population.
Borjas, (1994)	U.S	Cross Sectional Model	-Immigrants depress wages.
Winegarden and Khor (2006)	U.S	Simultaneous Equation Model	-Immigrants increase unemployment.
Manacorda <i>et al</i> (2006)	U.K	OLS Model	-Immigrants widen wage inequality between skilled and unskilled labour.
Islam, (2003)	Canada	VAR Model	-Immigrants depress wages.
Aydemir <i>et al</i> (2006)	Canada, Mexico and U.S	OLS Model	-Immigrants depress wages.
Johnson, (1980)	U.S	OLS Model	-Immigrants increase host country's GDP.
Taylor, (1995)	Argentina	OLS Model	-Immigrants increase host country's GDP.
Roberto, (1998)	U.S	OLS Model	-Immigrants lead workers to reduce their hours of work.
Maharaj, (2004)	South Africa	Survey	-Immigrants displace natives and depress wages.

## **Conclusion**

The main objective of this chapter was to give an overview of empirical and theoretical literature on the impact of immigration in a host country's labour market. The majority of empirical studies reviewed in this chapter have found that immigrants have a pronounced negative effect on wages and employment opportunities of natives. However, very few studies have found that immigrants have little impact on wages and employment in a labour importing country.

## CHAPTER 4

### ANALYTICAL FRAMEWORK

#### 4.1 Introduction

This chapter is underpinned by the literature reviewed in the previous chapters. This chapter provides an analytical framework for the study. The first sub-section of this chapter uses information from literature to develop an analytical model. The second subsection (4.2) defines the variables used in the model and 4.3 discusses the data sources for the variables. Section 4.4 presents data analysis. In this section the data is subjected to stationarity and cointegration tests which are steps required in the estimation of an Error Correction Model (ECM). The results from the error correction model are presented in section 4.5, and 4.6 concludes the chapter.

#### 4.2 Model Specification

The model used in this study is a modified version of that used by Islam, (2003) for Canada; Fertig, (2001) for the EU countries; Narayan and Smyth (2003) for New Zealand and Chasseau *et al* (2005) for Europe. It appeared robust in all cases. The chapter on literature, (both theoretical and empirical) showed that immigrants influence unemployment and wages in the host country. Based on the theoretical findings and data availability we will estimate the impact of migrants on the South Africa's labour market by measuring their displacement effect (unemployment) and their effect on welfare of workers (real wages). The study will estimate two models, that is the unemployment model and the wage model.

The unemployment model is represented by;

$$UN_t = f(GDPG_t, IMM_t, WA_t, INF_t) \dots \dots \dots 4.1$$

And the wage function is;

$$WA_t = f(IMM_t, GDPG_t, UN_t, INF_t) \dots \dots \dots 4.2$$



Where  $IMM$  is immigration in time  $t$ .

- $GDPG_t$  is the real GDP growth in time  $t$ .

- $WA_t$  is real wages in time  $t$ .

- $UN_t$  is unemployment rate in time  $t$ .

And  $INF_t$  is inflation rate in time  $t$ .

The estimated form of equation 4.1 is as follows;

$$UN_t = \partial_0 + \beta_1 WA_t + \beta_2 GDPG_t + \beta_3 IMM_t + \varepsilon_t \dots\dots\dots 4.3$$

Where  $\partial_0$  and  $\beta$ 's are coefficients to be estimated, and  $\varepsilon$  represents the stochastic error term. The underlying theory predicts that  $\beta_1 > 0$ ,  $\beta_2 < 0$ ,  $\beta_3 > 0$  and  $\beta_4 > 0$ .

In log form equation 4.3 can be written as follows;

$$\ln UN_t = \partial_0 + \beta_1 \ln WA_t + \beta_2 \ln GDPG_t + \beta_3 \ln IMM_t + \beta_4 \ln INF_t + \varepsilon_t \dots\dots\dots 4.4$$

The estimated form of equation 4.2 is as follows;

$$WA_t = \partial_0 + \beta_1 UN_t + \beta_2 GDPG_t + \beta_3 IMM_t + \beta_4 INF + \varepsilon_t \dots\dots\dots 4.5$$

Where  $\partial_0$  and  $\beta$ s are the coefficients to be estimated  $\beta_1 > 0$ ,  $\beta_2 > 0$ ,  $\beta_3 < 0$  and  $\beta_4 < 0$ .

And in log form it is;

$$\ln WA_t = \partial_0 + \beta_1 UN_t + \beta_2 GDPG_t + \beta_3 IMM + \beta_4 INF_t + \varepsilon_t \dots\dots\dots 4.6$$

### 4.3 Expected Relationships, Data Sources and Description

Results from Equation 4.4 and 4.5 are expected to follow theoretical and empirical findings discussed in Chapter 3 and the variables are expected to behave as follows;

Immigrants are blamed for displacing natives in the labour market. Labour migrants usually have the same skill as natives in a host country and as a result they compete with locals in the labour market thus, increasing unemployment in the country. Economic theory suggests that labour immigrants usually under price themselves in the host country's labour market and as a result

they are more preferred by employers compared to natives. Thus, a positive relationship is expected between labour migrants and unemployment.

In the unemployment model, wages are expected to have a positive relationship with unemployment. As the price for labour which is the wage rises, unemployment also rises. When wages rise employers shed labour in order to reduce costs and job losses result in an increase in unemployment.

A negative relationship is expected between economic growth and unemployment. When an economy grows more jobs are created and as a result employment increases in the economy. Countries with high GDP growth have low unemployment levels and countries with slow economic growth are characterized by high unemployment levels.

A positive relationship is expected between unemployment and inflation. When inflation rises firms retrench workers in order to reduce costs and this increases unemployment levels. An economy with high inflation rate can not create enough jobs to absorb its labour force and therefore, unemployment persists in such economies.

In the wage model economic theory supports a negative relationship between labour migrants and wages. Labour migrants increase labour supply in the host country. An increase in labour supply exerts pressure on wages and from simple economic theory of supply and demand, an increase in supply *ceteris paribus*, reduces the price of the commodity in question. In our case, an increase in labour supply reduces the wage.

A positive relationship is expected between wages and unemployment in the wage model. Periods of rising unemployment are also associated with a rise in wages. When wages rise supply of labour increases in the labour market but demand remains constant therefore leading to disequilibrium in the labour market. At a higher wage from the law of simple supply and demand, demand for labour becomes less than supply and therefore unemployment persists. A growing economy creates jobs for its citizens and also wages for workers increase. During

economic boom firms enjoy growing profits and also workers are rewarded more for rendering their services.

Labour migrants represent the number of people who enter the country to seek employment. These are people who hold work permits. The annual time series data was obtained from StatsSA, (2006) and ranges from 1980-2006.

The unemployment rate is the number of unemployed persons as a percentage of total labourforce, the latter including both the unemployed and those with jobs. There are two definitions of unemployment in South Africa, that is, the broad definition and the narrow definition. According to the broad definition a person is regarded as unemployed when he or she did not work in the previous week and is willing and actively seeking employment in the beginning of the following week. On the other hand, the narrow definition, which is known as the official definition, refers to a person who did not work in the previous week but is willing to work and is available to begin work within a week, and had been looking for employment or self employment in the previous four weeks. In this study we shall use the narrow definition. The unemployment variable is used as a measure of the displacement effect that migrants have on the local workers. The unemployment rate was obtained from various labour force surveys.

Gross Domestic Product (GDP) of a country is the market value of all final goods and services produced within a country in a given period of time. In this case the GDP growth in real terms will be used in our estimation. The GDP for this study was changed from nominal to real GDP by using a GDP deflator. The use of real GDP gives us the country's actual growth. The time series data for GDP was obtained from the Department of Industry and Trade, (2006).

The real wage is the income of an individual which is adjusted for the effects of inflation in order to provide a measure of actual changes in consumer's purchasing power overtime. It is calculated by deflating the nominal wage (monetary payment for services rendered in employment) by the consumer price index. The variable is a measure of the welfare of workers. The data for wages was obtained from the Department of Industry and Trade, (2006).

The inflation rate is the rate of increase in the average price level. The inflation rate was derived from the consumer price index by deducting the present year index from the base year index divided by the base year index and all multiplied by 100. The data for inflation was obtained from the South African Reserve Bank, (2006).

#### **4.4 Stationarity and Cointegration Tests**

Econometric modeling techniques of time series data range from Classical Linear Regression Modeling (CLRM) to cointegration regression modeling. The former approach assumes variables are stationary. This technique is susceptible to spurious results. The latter (cointegration) is the most preferred process for multivariate models as it eliminates the danger of estimating a spurious regression. In our case, we are going to test for cointegration. Cointegration seeks to determine whether our variables have a long run relationship or not. If we establish some cointegration we will then estimate an Error Correction Model. However, we start by testing our variables for stationarity. Results for stationarity tests will be presented numerically and also graphically. Tests for stationarity will then be followed by cointegration tests.

##### **4.4.1 Stationary Tests**

It is important that time series data that is used for econometric regression is tested for stationarity. The reasons for this are as follows;

- Stationarity or otherwise of a series influences its behavior. The effect of a shock in time  $t$  on a stationary data gradually dies away with time. That is, the effect of a shock becomes smaller at time  $t+1$  than at time  $t$ , and it becomes even smaller at time  $t+2$ . In the case of a non-stationary series, the effect of a shock does not die away with time instead it persists through out the period.
- Non-stationary data is not suitable for econometric modeling since it gives spurious regression. A spurious regression is one with two variables trending together overtime and could have a high  $R^2$  and t-statistics values even if the two variables are totally unrelated.

- Use of non-stationary data in econometric modeling gives invalid standard assumptions for asymptotic analysis that is, t ratios and F-statistics may not follow a t-distribution or F-distributions respectively.

The data to be used in this study will be subjected to stationarity tests. According to Brooks, (2002:367) it is important to determine whether a series is stationary or not because the stationarity or otherwise of a series can strongly influences its behavior and properties. A stationary series is a series with a constant mean;

$$E(Y_t)=\mu \text{ for all } t. \dots\dots\dots 4.7$$

A constant variance;

$$var(Y_t)=E(Y_t-\mu)^2=\sigma^2 \text{ for all } t. \dots\dots\dots 4.8$$

And a constant auto covariance;

$$Y_k=E[(Y_t-\mu)(Y_{t-k}-\mu)] \text{ for all } t \text{ and } k. \dots\dots\dots 4.9$$

The level of stationarity ranges from strict stationarity, weak stationarity or white noise. A series is said to be strictly stationary when the distribution remains the same as time progresses, implying that the probability that  $Y$  falls within a particular interval is the same now as at any time in the past or future (Brooks, 2002:230). Weakly stationarity refers to a series with a constant mean, constant variance and constant auto covariance. Lastly, a white noise process has a constant mean, constant variance and a zero auto covariance except at lag zero (Brooks, 2002:232).

A non-stationary series is a series which, when affected by a shock, the same effect of a shock continues to the long run, that is, the persistence of the shock is infinite.

$$Y_t=Y_{t-1}+\mu_t. \dots\dots\dots 4.10$$

Where  $\mu_t$  is white noise. When  $Y_{t-1}$  is 1 then the series is non-stationary. There are two types of non-stationarity, that is random walk model with drift and deterministic trend process.

A series is made stationary by differencing. If a series is differenced once to become stationary, then that series is integrated of order I (1). A series that is integrated of order I (d) is the one that is differenced d times to make it stationary. In our study we are going to use the Dickey Fuller Test (DF) and its stricter version, the Augmented Dickey Fuller Test (ADF) to test for stationarity.

### **Dickey Fuller Test**

The Dickey Fuller test, tests the null hypothesis that a series contains a unit root against an alternative hypothesis that a series is stationary, that is  $\theta=1$  and  $\theta<1$  respectively. According to Brooks (2002:377) the Dickey Fuller Test estimates the following equation;

$$Y_t = \theta Y_{t-1} + \mu_t \dots \dots \dots 4.11$$

Three models can be estimated for each variable using the Dickey Fuller test, that is an equation with;

- i) no constant and no trend
- ii) constant and no trend
- iii) intercept and trend

When the statistical value is smaller than the critical value in the Dickey Fuller test we reject the null hypothesis of a unit root and fail to reject the alternative hypothesis, which says that there is no unit root and therefore conclude that the series is stationary.

### **Augmented Dickey Fuller Test**

The Augmented Dickey Fuller (ADF) test is more preferred to the DF test since the later has critical values that are bigger in absolute terms and may sometimes lead to a rejection of a

correct null hypothesis (Brooks, (2004:379). The ADF test is the stricter version of the Dickey Fuller test. It estimates the following equation;

$$\Delta y_t = \psi y_{t-1} + \sum_{i=1}^p \alpha_i \Delta y_{t-1} + \mu_t \dots\dots\dots 4.12$$

The lags of  $\Delta y_t$  soak up any dynamic structure that may be present in the dependent variable to ensure that  $\mu_t$  is not auto correlated (ibid).

Like the DF test, the ADF test estimates three models for each variable, that is;

- i) with no constant and no trend
- ii) with constant and no trend
- iii) with constant and trend

The time frame under study is from 1980-2006. All estimated variables were converted to logs except for GDP growth. The estimated stationarity results for all the variables are summarized Table 4.1. The results in Table 4.1 indicate that all variables in levels are integrated of order one I (1).

**Table 4.1 Stationarity Test**

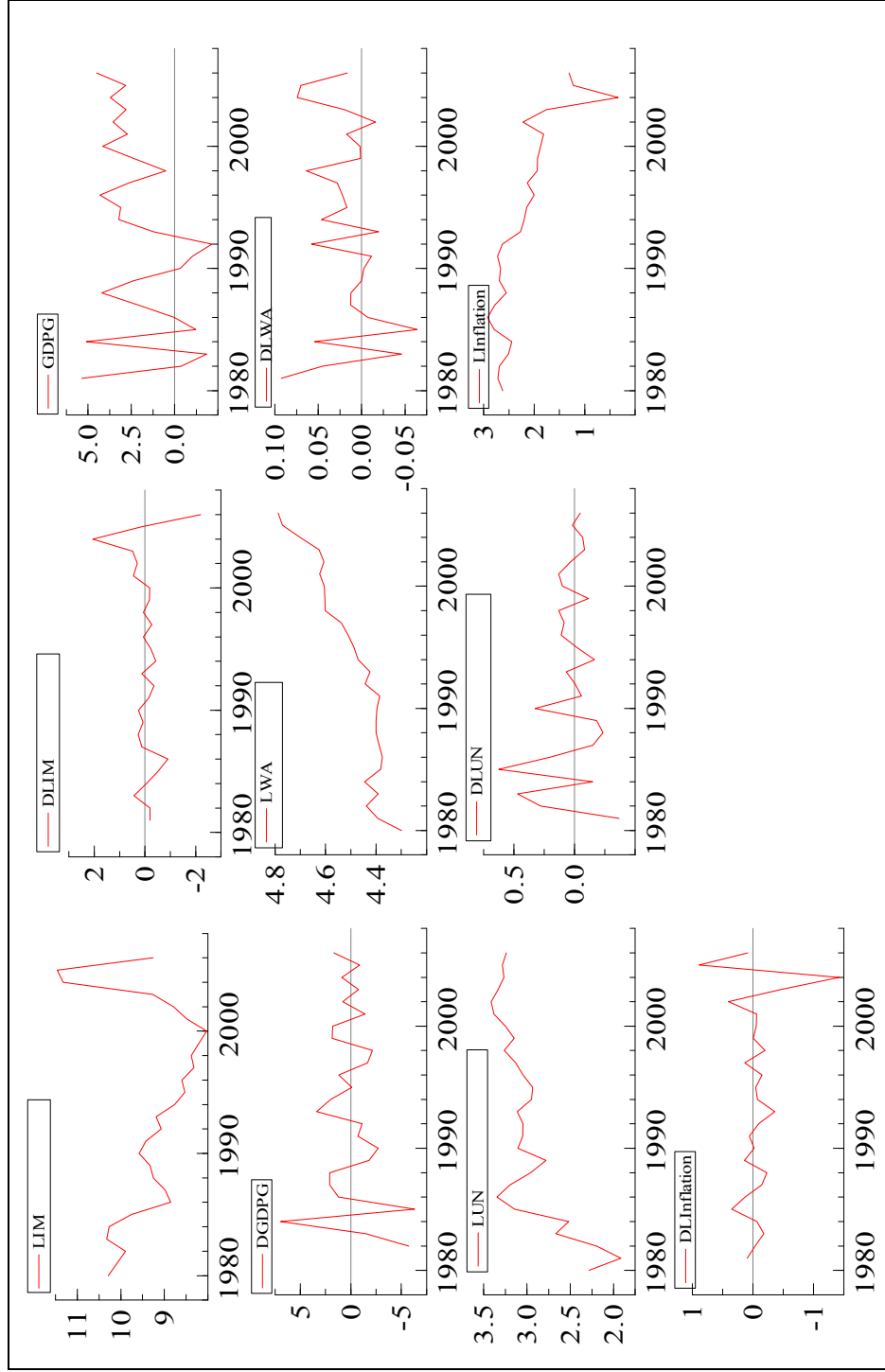
Variable	Dickey Fuller Test			Augmented Dickey Fuller Test			Order of Integration
	With Constant and Trend	No Constant and no Trend	With Constant and Trend	With Constant and Trend	No Constant and no Trend	With Constant and Trend.	
LIMM	-2.772**	-3.203*	-3.575	-7.589	-1.794	-1.885	I(1)
DLIMM	-4.092**	-4.013**	-3.539	-3.544**	-3.517*	-3.5.5	I(0)
LUN	0.5975	-2.121	-2.311	0.8249	-3.578*	-3.527	I(1)
DLUN	-5.335**	-5.558**	-5.938**	-2.7**	-2.641	-2.655	I(0)
LWA	2.059	-0.9786	-2.183	2.031	0.688	-2.397	I(1)
DLWA	-6.104**	-6.839**	-6.736**	-1.656	-2.064	-2.209	I(0)
GDPG	-2.722**	-4.086**	-5.155**	-0.5567	-2.081	-2.722	I(1)
DGDPG	-6.871**	-6.72**	-6.548**	-3.55**	-3.46	-3.43	I(0)
INF	1.0018	-1.3569	-3.4319	-1.1084	-1.0101	-3.1518	I(1)
DINFL	-5.988**	-6.0245**	-5.9436**	-5.4811**	-5.9004**	-6.8003**	I(0)
Critical Values at 1%	-2.656	-3.708	-4.355	-2.67	-3.734	-4.394	
Critical Values at 5%	-1.955	-2.98	-3.594	-1.957	-2.991	-3.612	

After first differencing all the variables became stationary.

The variables were also presented graphical in levels and in first differences to further lend support to the above results (see Figure 4.1).



Figure 4.1 Graphical Tests for Stationarity



The graphs in Figure 4.1 confirm the results in Table 4.1. The graphical results confirm that the series for immigration, wages, inflation and unemployment are not stationary in levels but become stationary after first differencing.

#### **4.4.2 Cointegration Test**

Cointegration is the long run relationship between variables. When two variables of the same order of integration are combined, the result will be  $I(1)$  but if the variables of different orders of integration are combined the combination will have integration equal to the largest order. In econometric modeling the variables should be integrated of the same order. The use of series that are integrated eliminates the problem of spurious regressions. The series that are integrated of different orders, for example  $I(1)$  or  $I(2)$ , will result in misspecification of the model.

Tests for cointegration include the Engle Granger Approach and the Johansen technique. The former seeks to determine whether the residuals have an equilibrium relationship or are stationary and the latter seeks to determine the rank of the matrix. Brooks, (2002:394) highlighted that the Engle Granger 2 Step method suffers from the following problems;

1. the usual infinite sample problem of lack of power in unit root and cointegration tests
2. there could be a simultaneous equation bias if the causality between  $y$  and  $x$  runs in both directions. This single equation approach requires the researcher to normalize on one variable.
3. it is not possible to perform any hypothesis tests about the actual cointegration relationship estimated.

The Johansen technique is more preferred to Engle Granger since it captures the underlying properties of time series data and provides all cointegration relationships between variables. In our case, we are going to use the Johansen technique which allows the hypothesis tests to be done and the VAR (Vector Autoregressive) tests.

Models 4.3 and 4.5 have the same variables, so even if we are going to estimate them separately we are going to do one cointegration test. The Johansen Technique makes use of the  $\lambda$  max and the  $\lambda$  trace to test for cointegration between variables.

Table 4.2 summarises cointegration results for the wage model;

**Table 4.2 Cointegration Results**

Ho: Rank=p	$\lambda$ Max	95%	$\lambda$ Trace	95%
p= =0	55.69**	33.5	111.8**	68.5
P< =1	22.81	27.1	56.14**	47.2
P< = 2	21.1*	21.0	33.33**	29.7
P< = 3	10.26	14.1	12.23	15.4
P<=4	1.962	3.8	1.962	3.8

Results in Table 4.2 show that there is one cointegrating vector. The  $\lambda$  max statistic rejects the hypothesis that there are no cointegrating vectors and therefore can not reject the hypothesis that the models have one cointegrating vector. The  $\lambda$  trace static can not reject the hypothesis that both models have one cointegrating vector. These results reflect the relationship between variables for both models. The variables have the same long relationship in both models.

**Figure 4.2 Cointegration graphs**

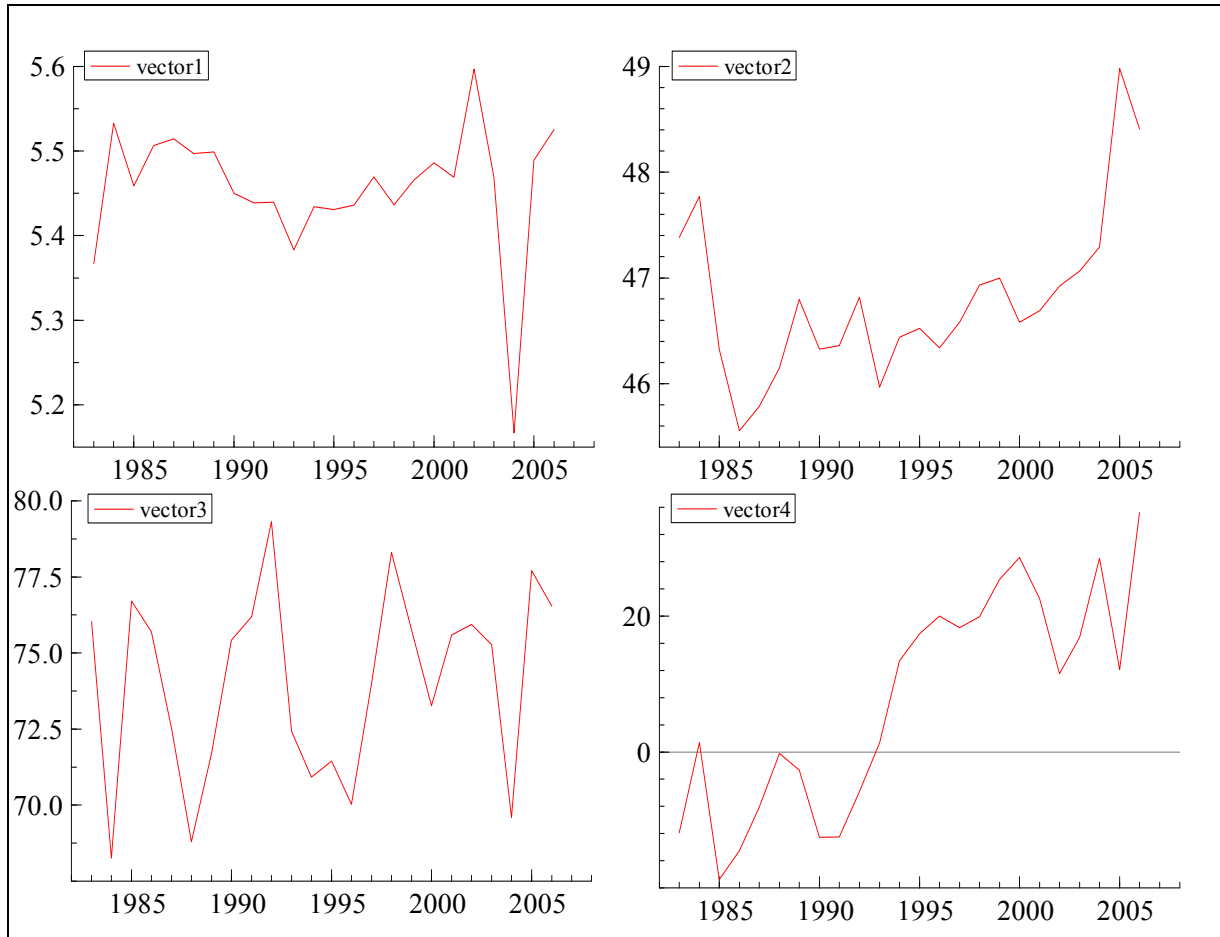


Figure 4.2 confirms results in Table 4.2. Vector 3 is the cointegrating vector in our VAR model.

Having established cointegrating relationships in both models, we then estimate Error Correction Models in both cases. The next section deals with the estimation of an Error Correction Model.

#### **4.5 Error Correction Model**

The cointegration test results in Table 4.2 suggest that the variables are cointegrated of order one  $I(1)$ . At this stage we proceed to estimate error correction models for wages and unemployment. To estimate an error correction model we started by deriving error correction terms for the respective equations. After generating the Error Correction Term, a general to specific estimation technique was followed. The general model is the one with five variables with two lags for each.

The results for the general models of unemployment and wages are presented in Table 5.1 and 5.2 respectively in the Appendix. The general to specific technique involves the estimation of a general model first and then gradually eliminating insignificant variables until only significant ones are left. The model specified by equation 4.3 and 4.4 were then estimated including their respective error correction terms. The results from the estimated models are shown in Table 4.3 and 4.4;

### The Unemployment Model

In this subsection we present the results for the unemployment model.

**Table 4.3 Estimated Results for the unemployment model-Dependent Variables**

Variable	Coefficient	t-values
Constant	0.254788	2.71**
GDP Growth	-0.0398186	-2.90**
Immigration <sub>t-2</sub>	0.101607	1.72*
Trend	-0.0116496	-2.20**
Error Correction Term <sub>t-1</sub>	-0.539255	-3.37***

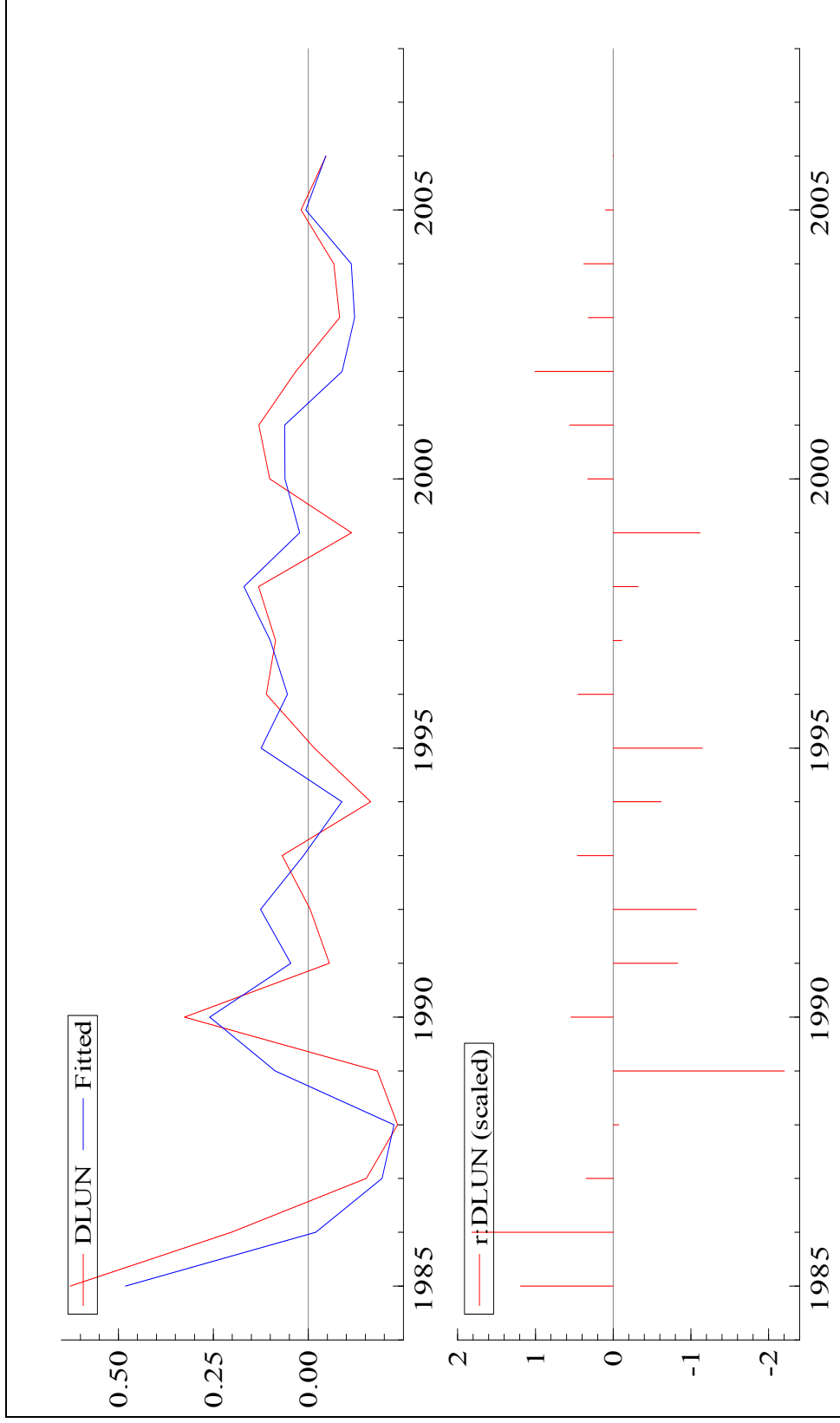
Adjusted R<sup>2</sup> =0.66443 DW=1.59 SE=0.121965 F (4, 17) =8.415 (0.001) \*\*

AR 1-2 test 0.59215 [0.5656]  
 ARCH 1-1 test 0.18317 [0.6747]  
 Normality test 2.1052 [0.3490]  
 Hetero test 0.74967 [0.6533]  
 RESET test 4.1656 [0.0581]

Where \* shows significance at 10%, \*\* significance at 5% and \*\*\* significance at 1%.

SE is the Standard Error of the regression, DW is the Durbin Watson statistic, AR is the Langrange Multiplier test for autocorrelation, ARCH is the Engle Arch test for autocorrelated squared residuals, Normality is the Jarque-Bera test for normality of the residuals and RESET is a general test for model misspecification.

Figure 4.3-Actual vs Fitted-Unemployment Model



In Table 4.3 the unemployment variable was regressed against economic growth, immigration, wages, inflation, trend and an Error Correction Term. Table 4.3 contains results for a specific model. The general version of this model is found in Table 5.1 in the Appendix.

The estimated model follows a Gaussian process with the signs of all coefficients conforming to economic theory. The residuals of the estimated model are not autocorrelated and they are free from heteroscedasticity, as evidenced by the ARCH test. The residuals are also normally distributed and there is no model misspecification. The estimated model is also robust, as shown by an adjusted  $R^2$  of 66% and low standard error of 0.12. The independent variables explain 66% of the dependant variable. Figure 4.3 plots the relationship between the fitted and the actual values. It would seem the estimates track the data generating process very well.

We now turn to the estimated coefficients. First, we look at economic growth. The variable is significant at 5% and has a negative sign which conforms to economic theory. The country's slow economic growth has always been a barrier to employment creation. The current economic growth stands at around 3% and has failed to create sufficient jobs. Unemployment has been increasing despite government's efforts to curb it since independence. Results in Table 4.3 show a negative and significant impact of economic growth on unemployment. A 1% rise in economic growth reduces unemployment by 0.29%. South Africa's economic growth is not enough to create more jobs.

The variable of interest in this study is immigration. Migrants usually have skills similar to those of natives. They then compete with the latter in the host country's labour market. Immigrants increase labour supply and as a result, worsen the unemployment crisis in the country. South Africa is home to political and economic displaced migrants from Zimbabwe, Somalia, Mozambique, Lesotho, Pakistan, India and West African countries, to mention just a few. These migrants have same skills as natives and therefore substitute them in the labour market.

Results in Table 4.3 show a positive and significant relationship between immigrants' numbers and unemployment. This variable is significant at 10% and its sign conforms to economic theory. A 1% increase in migrants' volumes increases unemployment by 0.1%. Migrants in a host

country enter the country's labour market by under pricing themselves. They accept wage offers that can not be accepted by natives. By so doing immigrants make themselves to be more preferred by employers compared to natives. This results in the displacement of natives in the local labour market. Migrants, especially the unskilled ones enter the country in large numbers and they also remain unemployed in the country and therefore add to the unemployment figures of the host country. In a nutshell, this result suggests that Immigrants displace natives in the labour market. This variable is significant at 10%.

A study done by Venturini and Villosio (2004), in Italy also found the same result. Although it was done for a developed country the study found a displacement effect of 4 for every 10 immigrants who get employment. This means 4 natives lose their jobs to immigrants and the other 6 fill in new positions. The displacement effect is higher than that of South Africa where we found that for every 10 immigrants who are employed only one native is displaced and the other nine fill in new positions. This is because the country is faced with a challenge of scarce skills. The Department of Home Affairs issues work permits to those with scarce skills and these skilled workers do not necessarily compete with natives but complement them in the labour market. Dustmann *et al* (2005) in the UK also found the same result. In the UK the displacement effect at 1.7 was lower than that of Italy. It is closer to that of South Africa. For every 10 immigrants who are employed, in the UK 2 natives are displaced.

Technology also affects employment creation in a country. This variable is significant at 5%. Employment creating technology has a negative and significant impact on unemployment. Results for the unemployment model estimated show that a 1% rise in technology reduces unemployment by 0.2%.

The error correction term for this model shows that only 53% of the equilibrium error is corrected in one year. The sign is negative therefore conforms to economic theory and it is significant at 1%. The speed of unemployment adjustment is relatively slow due to the consequences of the actions of the apartheid government which led to rigidities or controls in the labour market. Black communities are largely hit by unemployment and poverty levels compared to their White counterparts. The fight against unemployment by the democratic government is



deterred by the apartheid imbalances such as low education and training between Black and White communities.

Rigidity in the labour market is also due to the presence of strong trade unions. Trade Unions prevent free response of the labour market to market forces. As a result, whenever there are distortions in the labour market, market forces can not adjust to equilibrium and unemployment persists.

### The Wage Model

Results for the wage model are presented in this sub-section.

Results for model 4.4 are as follows;

**Table 4.4 Wage Model**

Variable	Coefficient	t-values
Constant	-0.0368614	-2.59
Wages <sub>t-2</sub>	0.459096	2.19**
Immigration	0.0143392	1.67*
Unemployment <sub>t-2</sub>	0.0734561	2.32**
Trend	0.00253629	3.22***
Error Correction Term <sub>t-1</sub>	-0.361212	-3.13***

Adjusted R<sup>2</sup>=0.558083      SE=0.0261136      F (5.18) =4.546 (0.007) \*\*

AR 1-2 test	0.67495 [0.5231]
ARCH 1-1 test	0.61476 [0.44445]
Normality test	0.88585 [0.6422]
Hetero test	0.72897 [0.6862]
RESET test	1.0545 [0.3189]

Where \* represents significance at 10%, \*\* at 5% and \*\*\* at 1%.

The estimated model is robust with adjusted R<sup>2</sup> of 55%. Diagnostic tests were carried out to confirm if the regression results conform to the assumptions of Ordinary Least Squares model (OLS). SE is the Standard Error of the regression, DW is Durbin Watson statistic. The AR (Auto-Regressive) results confirm that there is no serial correlation in the regression model. The

ARCH (Auto-Regressive Conditional Heteroscedasticity) test confirms that there is no heteroscedasticity. The residuals are normally distributed as shown by the Normality ( $\text{Chi}^2$ ) test. Results indicate that the model passed the Reset test thus, variables estimated in the model helped to explain the endogenous variable.

Figure 4.4 Actual Versus Fitted – Wages Model

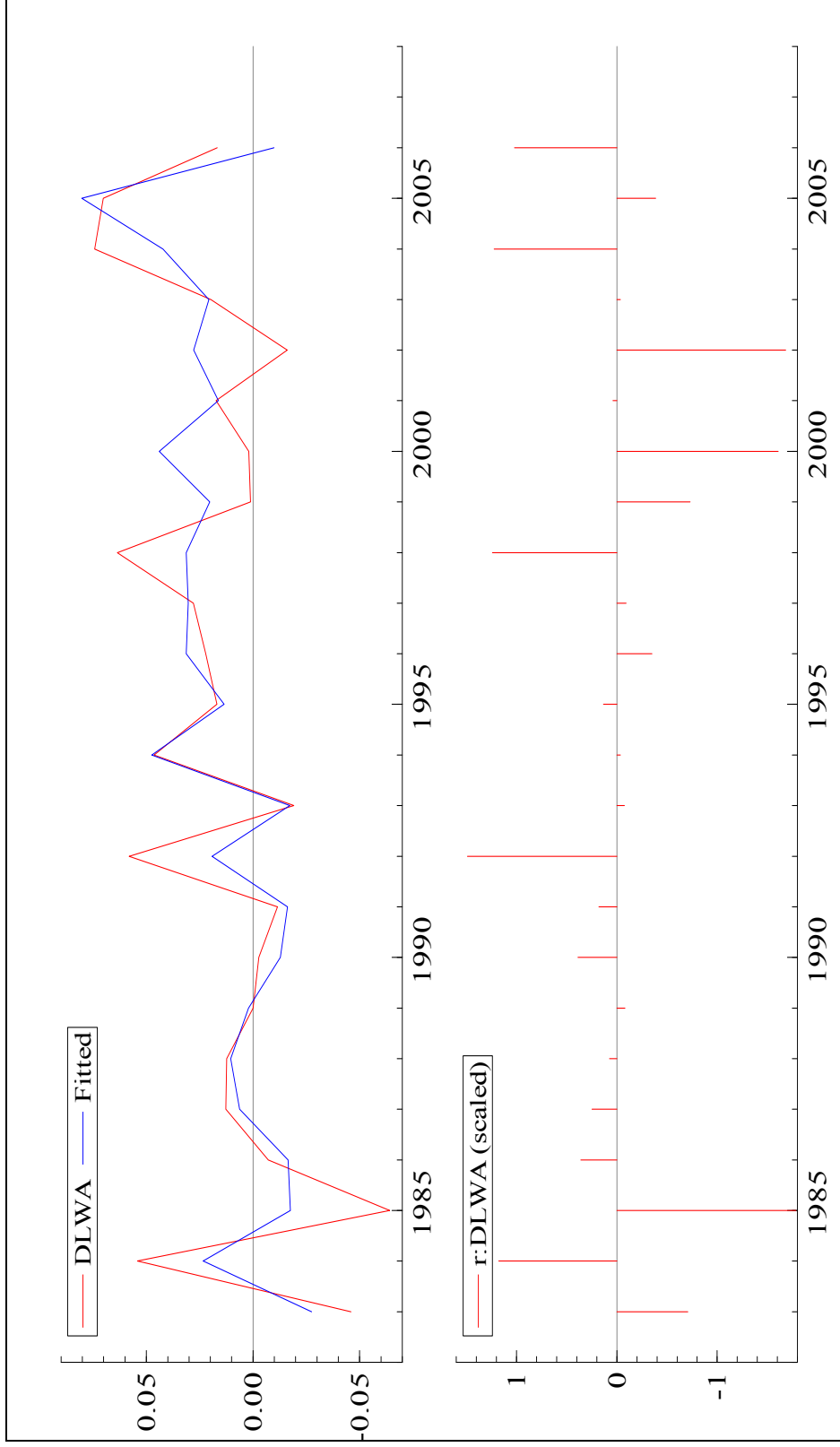


Figure 4.4 shows that the estimated model is robust since the actual and the fitted residuals trend together and also the scaled residuals follow a normal distribution.

Immigration is the variable of interest in this study. The variable is significant at 10% but has a surprisingly positive relationship with wages. This may be because labour immigrants to South Africa bring enough human capital to offset the dilution of physical capital and as a result contribute positively to output growth in the country. Migrants have been contributing positively to the growth process of South Africa. Positive economic growth leads to a rise in wages. As a result migrants improve the host country's wages. The South African economy mainly absorbs migrants with scarce skills. Only people with skills that are highly needed by the country's labour market get permission to work in the country. Scarce skilled human capital in South Africa includes economists, engineers, school teachers, higher education lecturers, health professionals, doctors, business systems analysts and programmers and legal professionals, just to mention a few. The study found that a 1% increase in migrant labour increases wages by 0.01% in period two.

Addison and Worwick (2002) in Australia also found a positive relationship between immigrants and wages. According to this study, a 1% increase in immigrants' numbers increases natives' wages by 1%. This is the same result as in our study.

Maharaj, (2004) found a different result in South Africa. The study found that immigrants depress wages in the South African labour market. This may be because the study had a few observations to give a true picture of labour market impact of migrants in the country. The period also under observation may also be a problem. The period under study is the first decade of democracy in which wages might have been affected by other factors other than rising migration numbers. This is the period when Black people of South Africa started moving to urban areas to look for employment. Wages might have been depressed by an increase in labour supply due to internal labour movements and not due to international migration.

The other variable is unemployment. A positive relationship exists between unemployment and wages. This conforms to economic theory and the variable is significant at 5%. A rise in wages

leads employers to retrench workers since the cost of labour would have gone up. A rise in wages leads to disequilibrium in the labour market since supply of labour becomes greater than demand and therefore the excess labour remains unemployed. The study found positive and significant impact of unemployment on wages thus, a 1% increase in inflation leads employers to raise wages for their employees by 0.07% in period two.

Wages are also influenced by wages of the past periods. Current wages are also influenced by wages in the past periods. The study found that a 1% increase in wages of the past two periods leads to 0.45% increase in current wages. Wages are sticky downwards as they are influenced by wages of the past periods and workers unions. The wages of the past periods will keep wages of the next periods going up. Therefore past periods wages have a positive impact on current wages. Wages are sticky downwards, higher wages in one period can not be preceded by the lower wages in next.

Technology has a huge influence on labour market outcomes of a country. The variable is significant at 1% level. A positive relationship was also identified between wages and technology. A technology that supports economic growth and employment creation also leads wages to grow. The study found that a 1% change in technology leads to a 0.003% growth in wages, that is, a technology that grows an economy also creates jobs and improves wages.

The error correction term is negative conforming to economic theory and is significant at 1%. Results in Table 4.4 show that only 36% of last period's equilibrium error has been corrected. This increases the inflexibility of the labour market. The South African government is still struggling to correct the injustices of apartheid which left most people in poverty by creating rigidities in the labour market. The slow economic growth in the country which currently stands at 4.9% also leads the speed of adjustment to be slow. The minimum wage laws may, prevent market forces from responding to changes in the labour market. The existence of a minimum wage prevents wages from changing whenever there are distortions to maintain equilibrium. This slows down the correction of errors of the previous period. The country's labour market is highly unionized. The strength of Trade Unions may also contribute to such wage rigidities.

## **Summary**

This chapter estimated an empirical model that links immigration to labour market outcomes, that is, unemployment and wages. The variables were first subjected to stationarity and cointegration tests. The study then estimated an error correction model on annual time series data from 1980 to 2006.

The study used the unemployment and the wages model to explain the labour market impact of migrants in South Africa. Results in Table 4.3 and 4.4 that is for unemployment and wages respectively, show that migrants have an effect on host country's labour market landscape. Migrants can worsen natives' welfare by displacing them in the labour market. Labour migrants who hold skills similar to those of natives compete for jobs thereby, displacing them in the process. On the other hand, migrants who complement natives in the labour market may improve their welfare by forcing their wages to rise by increasing the host country's output growth. The effect of immigrants on wages has been positive in the country since the labour market is strongly unionized and therefore market forces can not respond to changes in the labour market conditions in order to maintain equilibrium.

## CHAPTER 5

### Conclusions and Policy Recommendations

In this section, we provide a summary of the study on the impact of immigrants on the labour market in South Africa and then conclude by prescribing policies.

#### 5.1 Summary

This study sought to examine the impact of migrants on the host country's labour market. South Africa has been inundated with migrant labour since before the colonization of Africa. Labour migrants are blamed for increasing labour supply and therefore, displacing natives on the labour market and also depressing wages. On the other hand, labour migrants create employment by increasing demand for goods and services and, in turn an increase in demand for goods and services increases demand for labour. Labour immigrants can therefore create employment and increase wages for natives in a host country. Thus labour immigrants can either have positive or positive consequences on the labour market of a receiving country. The impact of labour immigrants on the South African labour market has never received enough attention.

People migrate due to push and pull factors. Push factors can either be economic (for example 80% unemployment and 230 million % inflation in Zimbabwe), political or environmental. On the other hand pull factors include economic (for example Gauteng is the power house of Africa and more than half of Africa's GDP is in South Africa) and political factors.

Labour migration benefits both sending and receiving countries. Receiving countries benefit from "brain gain" (for example migrants bring skills and innovation. Sending countries benefit from remittances. On the other hand, the receiving countries suffer due to pressure on resources and increased unemployment. The sending country suffers due to brain drain.

The study also reviewed theoretical literature that guided this study. The theories reviewed were the Neoclassical, Area Analysis and the Hecksher-Ohlin Models. These theories were used to

explain the impact of migrants on the labour market. According to the Neoclassical theory entry of labour immigrants into a host country increases labour supply. An increase in labour supply lowers the price of labour.

The Area Analysis theory says labour immigrants widen the welfare gap between skilled and unskilled labour. That is, labour immigrants depress wages of their native counterparts and increase wages for skilled workers. Employment opportunities for unskilled workers also decrease. Lastly, the Hecksher-Ohlin theory says labour immigrants depress wages for their substitutes and increase wages for their complements. Immigrants also increase demand for their complements and decrease demand for their substitutes.

Empirical studies reviewed argue that immigrants depress wages. Islam, (2003); Aydemir *et al* (2006), in the US; Goldiner and Paserman (2004), in Israeli and Maharaj, (2004) are among the studies to observe this. Some studies found that immigrants increase unemployment for example, Glitz, (2006) in German; Manacorda *et al* (2006) and Dustmann *et al* (2005), both in the U.K; among others. Venturini and Villosio (2004), in Italy and Addison and Worwick (2002) in Australia found that labour immigrants increase wages in a host country's labour market.

The impact of labour migrants was analysed by estimating the unemployment model and the wages model separately. The estimated models were robust, as shown by high  $R^2$  of 66% and 55% respectively. Results show that migrants worsen unemployment levels of the host country. Migrants who enter the country displace natives in the labour market. Migrants are preferred by employers compared to natives, as they are employed with less hassle due to lack of unionisation and also their ability to work for long hours.

Migrants compete for Blue collar job with South African workers. As a result labour supply for Blue collar workers grows at a faster pace than the demand for such workers. Thus, unemployment results. Employers also prefer migrants because they can pay them a lesser wage compared to what a native can accept. The country's wages are also low compared to international standards, as a result white collar workers also spend a lot of time moving between



jobs. As the job theory says, the workers in South Africa prefer to wait till they get a job that matches their education and skill. In a way this worsens unemployment in the economy.

Overall, there is job creation in the country but the bulk of the jobs are taken away by immigrants. The South African economy is also not generating enough jobs to absorb the growing labour supply in the country and as a result unemployment levels continue to rise.

On the other hand, the effect of migrants on wages is surprisingly positive. The results for this study are supported by the Keynesian theory which says “wages are sticky downwards” instead of migrants depressing wages to maintain equilibrium in the labour market they displace natives. Wages remains high and unemployment increases. The Keynesian theory argues that the labour market will not always adjust to equilibrium whenever there are distortions. An increase in labour supply, which will be expected to depress wages in order to restore equilibrium may not happen. Wages may not fall due to an increase in labour supply. Thus, wages will remain unchanged resulting in demand deficient unemployment. This result rejects the classical argument that an increase in labour supply depresses wages. Migration to South Africa started two centuries ago and there has been an overtime growth in wage rate. The country had been experiencing a growth in real wages.

The supply for immigrant labour in South Africa is on the rise and at the same time, the country’s growth in job creation is very slow. Current economic growth seems not to be enough to eradicate the unemployment crisis in the country. Employment intensity of economic growth in South Africa seems to have weakened. The economy is unable to reverse or slow down the dominant trend of massive unemployment (Harsch, 2004).

## **5.2 Policy Recommendations**

Migration affects both sending and receiving countries due to the brain drain and pressure on resources respectively. African countries need to adapt a unified migration policy which will reduce migration flows out of their home countries.

The country has to adopt a mechanism of documenting illegal immigrants. Undocumented immigrants have a larger impact on the South African economy, but this impact can not be measured. Undocumented immigrants put pressure on country's resources and distort the impact and outcomes government policies. Migration needs to be controlled and monitored to prevent impact on the labour market.

This study leaves some unanswered questions about migration in South Africa. Do immigrants affect all natives equally? The country receives skilled and unskilled migrants with the number of the unskilled outweighing that of skilled ones. Although the country depends on expatriates for sectors such as health, engineering and education etc. It may still be argued that the number of migrants with such professional requirements entering the country is fewer than the unskilled ones. More research work needs to be done to determine what the impact on Blue collar workers is being exerted by immigrants on their native counter parts.

## REFERENCES

Adepoju, A. (1998). **International Migration and Africa**. *International Migration Review* 33(2): 468-483.

Adepoju, A. (2004). **Changing Configurations of Migration in Africa**. *International Migration* 41(1): 3-28.

Addison, T and Worwick, C. (2002). **The Impact of Immigrants on the Earnings of Natives: Evidence from Australian Macro Data**. *The Economic Record*, 78:68-78.

Akokpari, J, K. (1999). **The Political Economy of Migration in Sub-Saharan Africa**. *African Sociological Review* 3(1).

Arnold, R, A. (2005). **Economics**. 7<sup>th</sup> Edition. South Western. Thompson.

Altonji, J and Card, D. (1989). **The Effects of Immigration on the Labour Market Outcomes of Natives**. *Demography*, 25(1).

Aydemir, A and Borgas, G, J. (2006). **A comparative Analysis of the Labour impact of International Migration: Canada, Mexico and the U.S**. Online Available: <http://www.client.norc.org>.(Accessed on 10 October 2007).

Bean, F, D; Lovvell, L, B and Taylor, J, L. (1988). **Undocumented Mexican Immigrants and the earnings of the other Workers in the United States**. *Demography*, 25(1):35-52.

Block, A. (2006). **Emigration from Zimbabwe. Migrant vs Perspective**. *Social Policy and Administration* 40(1):67-87.

Bodvarsson, O and Van den Berg, H. (2003). **The Impact of Immigration on Local Economy. The Case of Dawson Country, Nebraska**. *Great Plains Research*, 13(2):291-309.

Borjas, G, J. (1991). **Immigrants in the U.S Labour Market: 1940-1980.** *American Economic Review*, 81:287-291.

Borjas, G, J. (1994). **The Economics of Immigration.** *Journal of economics Literature*, 32:1667-1717.

Borjas, G, J. (1996). **Labour Economics.** Singapore. Library of Congress Cataloguing in Publication Data.

Borjas, G, J. (1999). **The Economic Analysis of Immigration.** *Handbook of Labour Economics*, 1697-1760.

Borjas, G, J. (2003). **The Labour Market Curve is Downward Sloping: Reexamining the Impact of Immigration on the Labour Market.** *Quarterly Journal of Economics*, 118(4):1335-74.

Borjas, G, J. (2004). **Increasing the study of Labour through Immigration: Measuring the Impact on Native born Workers.** Online Available: <http://www.cis.org/articles>. (Accessed on 17 September 2007).

Borjas, G, J. (2006). **The Impact of Immigration on the Labour Market.** Online Available: <http://www.jvi.org>. (Accessed 10 September 2007).

Borjas, G, J and Ayedmir, A. (2007). **International Migration and Development.** Online Available:<http://www.growthcommission.org/equity>. (Accessed on 25 October 2007).

Bohn, S and Sanders, S. (2006). **Refining the Estimation of Immigration's Labour Market effects.** Online Available: <http://www.econ.duke.edu>. (Accessed on 2 August 2007).

Brooks, C. (2002). **Introductory Econometrics for Finance**. Library Congress Cataloguing in Publication Data. United Kingdom.

Camarota, S, A. (1998). **The Impact of Immigration on California: Summary and Analysis of Immigration in a Changing economy. California's Case**. Online Available: <http://www.labour.co.gov/panel>. (Accessed on 10 September 2007).

Card, D. (1990). **The Impact of the Mariel Boatlift on the Miami Labour Market**. *Industrial and Labour Relations Review*, 43(2):245-57.

Card, D. (2001). **Immigrant inflows, Natives outflows and the Local Labour Market Impacts of Higher Immigration**. *Journal of Labour Economics*, 19(1):22-64.

Card, D. (2005). **Is the New Immigrant Really so Bad?** *The Economic Journal*, 115:300-23.

Castel-Branco. (2002). **Economic Linkages between South Africa and Mozambique**. Online Available:<http://www.sarpn.org/documents>. (Accessed on 15 August 2007).

Carmel, U, C. (1989). **The Impact of Immigration on the Human Capital of Natives**. *Journal of Labour Economics*, 7(4):464-86.

Carter, S, B and Sutch, R. (2007). **Labour Market Flooding. Migrant Destination and Wage Change during America's Age of Mass Migration**. Online Available: <http://www.borderbattles.ssrc.org>. (Accessed on 17 July 2007).

Citrin, J. (2003). **Public Opinion about Immigration: The Role of Identities, Interests and Information**. Online Available: <http://www.cps.sagepub.com/cgi>. (Accessed on 1 November 2007).

Chen, K, P; Chiang, H, S and Siu, F, L. (2003). **Migration, Family and Risk Diversification**. *Journal of Labour Economics*, 21(2):353-380.

Chusseau, N; Dumont, M; Hellier, J; Rayp, G and Willeme, P. (2005). **Wage Inequality and Immigration in Europe during the first stage of International Division of Labour (1960-1975)**. Available Online: <http://www.worldbank.org/eca/immigration>. (Accessed on 20 April 2007).

Chirwa, W, C. (1996). **The Malawi Government and South African Labour Recruiters, 1974-92**. *The Journal of Modern African Studies* 34(4):623-642.

Chirwa, W, C. (1998). **Aliens and AIDS in Southern Africa: The Malawi-South Africa Debate**. *Africa Affairs* 97(386):57-79.

Council of Economic Advisers. (2007). **Immigration Economic Impact**. Online Available: <http://www.msnbc.msn.com>. (Accessed on 22 October 2007).

Crush, J and James, W. (1995). **Mine Migrancy in Democratic South Africa**. *Journal of Southern African Studies* (23)1.

Crush, J. (1999). **Contract Migration to South Africa: Past, Present and Future**. Online Available: <http://www.queensu.ca/samp/transform/Crush.htm>. (Accessed on 27 May 2007).

Crush, J, Ulicki, T, Tseane, T and Jansen van Veuren, E. (2001). **Undermining Labour. The Rise of Subcontracting in South African Gold Mines**. *Journal of Southern African Studies*, 27(1)5-31.

Crush, J. (2005). **Migration in Southern Africa**. Online Available: <http://www.gcim.org>. (Accessed on 10 May 2007).

Davies, R and Head, J. (1995). **The Future of Mine Migrancy in the Context of Border Trends in Migration in Southern Africa**. *Journal of Southern African Studies*, 21(3):439-450.

Department of Industry and Trade, (2006). **Economic Statistics**. Online Available: <http://www.thedti.gov.za/econdb>. (Accessed on 10 July 2008).

Drinkwater, S, Levine, P, Lotti, E and Pearlman, J. (2003). **The Economic Impact of Migration: A Survey**. Online Available: <http://www.econpapers.repec.org/paper/sursurrec/0103.htm>. (Accessed on 15 April 2007).

Dustman, C; Fabbri, F; Wadsworth, J and Preston, I. (2003). **The Impact of Immigration on the UK Labour Market**. Available Online: <http://www.homeoffice.gov.uk/rds/pdfs>. (Accessed on 15 March 2007).

Dustmann, C; Fabbri, F and Preston, I. (2005). **The Impact of Immigration on the UK Labour Market**. Online Available: <http://www.econ.ucl.ac.uk>. (Accessed on 25 October 2007).

Eaton, A, L. (1998). **Immigration and the Structure of Demand: Do Immigrants Alter the Labour Market Composition of U.S Cities**. Online Available: <http://www.eric.ed.gov>. (Accessed on 10 October 2007).

Euwals, R; Dageuos, J; Gilberts, M and Roodernburg, H. (2007). **Immigration, Integration and the Labour Market: Turkish Immigrants in Germany and Netherlands**. Online Available: <http://www.cpb.nl>. (Accessed on 2 September 2007).

Fertig, M. (2001). **The Economic Impact of EU Enlargement: Assessing the Migration Potential**, *Empirical Economics*, 26, 707-720.

Friedberg, R and Hunt, J. (1995). **The Impact of Immigration on the Host Country's Wages, Employment and Growth**, *Journal of economic Perspectives* 9(2):23-44.

Friedberg, R, M. (1997). **The Impact of Mass Migration on the Israeli Labour Market**. *Quarterly Journal of Economics*, 116(4):1373-1408.

Genesis Analytics. (2006). **Facilitating Southern African Remittance Networks**. Online Available: <http://www.finmarktrust.org.za/documents>. (Accessed on 6 September 2007).

Glitz, A. (2006). **The labour Market Impact of Immigration.Quasi-Experinmental Evidence**. Available Online:[http://www.iza.org/conference\\_files](http://www.iza.org/conference_files). (Accessed on 10 April 2007).

Goldiner, S, C and Paserman, M, D. (2004). **The Dynamic Impact of Immigration on Natives' Labour Market out Comes: Evidence from Israeli**. Online Available: <http://www.econpapers.repec.org/paper>. (Accessed on 2 August 2007).

Grossman, J. (1982). **The Substitutability of Natives and Immigrants**. *Review of Economic Studies*, 64(4):596-603.

Hanson, G, H. (2001). **Immigration and the U.S Economy: Labour Market Impacts, Illegal Entry and Policy Choices**. Available Online:[www.imf.org/external](http://www.imf.org/external). (Accessed on 15 May 2007).

Hatton, J, T and Tani, M. (2005). **Immigration and Inter-Regional Mobility in the UK, 1982-2000**. *The Economic Journal*, 115:342-358.

Harsch, E. (2004).**Progress in many areas, but legacy of inequality runs deep**. Available Online: <http://www.un.org/ecosocdev/geninfo/afrec>.

Heisel, D, F. (1982). **Theories of International Migration**. Online Available:<http://www.oup.co.uk>. (Accessed on 10 May 2007).

Holtz-Eakin, D.(2005). **The Role of Immigrants in U.S Labour Market**. Online Available: [http://digitalcommons.ilr.cornell.edu/key\\_workplace](http://digitalcommons.ilr.cornell.edu/key_workplace). (Accessed on 10 May 2007).

ILO. (2000). **Migration: A Truly Global Phenomenon**.



Available Online:<http://www.International Labour Organisation.org/public>. (Accessed on 11 April 2007).

ILO. (2004). **Poverty and Structural Adjustment some remarks on Tradeoffs between Equity and Growth**. Online Available:<http://www.ilo.org/public/employment>. (Accessed on 10 November 2007).

ILO. (2006). **International Labour Migration and Development. The ILO perspective**. Online Available: <http://www.ilo.org/public/english/protection/migrant/download/perspectives>. (Accessed on 25 May 2007).

Islam, M, A. (2003). **Labour Market Effects of Immigration: Evidence from Canada**. Online Available: <http://www.econ.upf.es>. (Accessed on 17 August 2007).

Johnson, G, E. (1980). **The Labour Market Effects of Immigration**. *Industrial Labour Relations Review*, 33(3):331-41.

Kanyenze, G. (2004). **African Migrant Labour Situation in Southern Africa**. Online Available:<http://www.gurn.info/topic/migrant>. (Accessed on 10 April 2007).

Kotze, H and Hill, L. (1997). **Emergent Migration Policy in a Democratic South Africa**. *International Migration* 35(1):6-35.

Labour Force Survey. (2005). **Labour Force Survey**. Online Available: <http://www.gov.za>. (Accessed on 10 May 2007).

Longhi, S; Nijkamp, P and Poot, J. (2006). **The Impact of Immigration on the Employment of Natives in regional Labour Markets: A Meta-Analysis**. Online Available: <http://www.waikato.ac.nz/php/research>. (Accessed on 10 September 2007).

Maharaj, B and Moodley, V. (2000). **New African Immigration to the Durban Region.** *Canadian Journal of African Studies*, 34(1):149-60.

Maharaj, B. (2004). **Immigration to Post-apartheid South Africa.** Available Online:<http://www.gcim.org>. (Accessed on 9 April 2007).

Manacorda, M; Manning, A and Wadsworths. (2006). **The Impact of Immigration on the Structure of Male Wages: Theory and Evidence from Britain.** Available Online: <http://www.Econ.ucl.ac.uk>. (Accessed on 15 April 2007).

Mattes, R, Crush, J and Richmond, W. (2002). **The Brain Gain: Skilled Migrants and Immigration Policy in Post-Apartheid South Africa.** Online Available:<http://www.queensu.ca/samp/sampresources>. (Accessed on 1 August 2007).

Minaar, A, Pretorius, S and Wentzel, M. (1995). **Who goes there? Illegals in South Africa.** *Indicator SA*, 12(Winter):33-40.

Meyer, D, B and Fairlie, R, W. (2000). **The Effect of Immigration on Native Self Employment.** *Journal of Labour Economics*, 21(3):619-50.

Nasser, E, H. (1996). **Immigration to lead to Population Boom in the West.** Available Online:<http://www.ncpa.org/pd/immigrant>. (Accessed on 20 April 2007).

Narayan, K, P and Smyth, R. (2003). **The Determinants of Immigration from Fiji to New Zealand: An Empirical Reassessment. Using the Bounds Testing Approach.** Available Online:<http://www.metapress.com/index>. (Accessed on 15 April 2007).

Nkau, D, J. (2003). **Cross-Border Migration to South Africa in the 1990s: The Case of Zimbabwean Women.** Online Available: <http://www.upetd.up.ac.za/thesis>. (Accessed on 12 August 2007).

Ottaviano, G, I, P and Peri, G. (2006). **Rethinking the Gains from Immigration: Theory and Evidence from the U.S.** Online Available: <http://www.immigrationonline.org/research>.

(Accessed on 17 October 2007).

Parasnis, J; Fausten, D and Smyth, N. (2002). **The Impact of Immigration on Native Workers in Australia.** Online Available: <http://www.economisc.harvard.edu>. (Accessed on 10 September 2007).

Peberdy, S. (2002). **Hurdles to Trade? South africa's Immigration Policy and Informal Sector Cross-Border Traders in the SADC.** Online

Available:<http://www.queensu.ca/samp/migrationresources>. (Accessed on 3 September 2007).

Peracchi, F and Depalo, D. (2006). **Labour Market outcomes of Natives and Immigrants: Evidence from the ECHP.** Online Available: <http://www.oecd.org/dataoed>. (Accessed on 25 October 2007).

Pischke, J and Velling, J. (1997). **Employment Effects of Immigration to Germany: An Analysis Based on Local Labour Markets.** *The Review of Economics and Statistics*, 79(4):594-604.

Pope, D and Withers, G. (1993). **Do Immigrants Rob Jobs? Lessons of Australian History, 1861-1991.** *The Journal of Economic History*, 53(4):719-42.

Riley, G. (2006). **Labour- Market Migration.** Online Available: <http://www.pjb.co.uk/npl>. (Accessed on 15 August 2007).

Roberto, P. (1998). **Impact of Immigration on the Labour Market for Native-born Workers: Incorporating the Dynamics of International Migration.** *Eastern Economic Journal*, Fall 1998:1-10.

Roodenburg, H; Euwals, R and Rele, H. (2003). **Immigration and the Dutch Economy**. Online Available: <http://www.cpb.nl>. (Accessed on 27 September 2007).

Simon, D. (1998). **South Africa in Southern Africa**. Cape Town.  
British Library of Cataloguing Publication Data.

Solomon, H. (1996). **Strategic Perspectives on Illegal Immigration into South Africa**. *African Security Review*: 5(4).

Solomon, H. (2000). **Contemplating the Impact of Illegal Immigration on the Republic of South Africa**. Online Available:<http://www.up.ac.za/academic>. (Accessed on 20 June 2007).

South African Reserve Bank. (2006).**South African Quarterly Bulletin Statistics**. Available Online: <http://www.dti.gov.za/econdb/resbank/rbrap.html>.(Accessed 27 September 2007).

StatsSA.(2003). **Tourism**. Online Available:<http://www.statssa.gov>. (Accessed on 10 April 2007).

StatsSA.(2006).**Tourism and Migration**. Online Available:<http://www.statssa.gov>. (Accessed on 15 June 2007).

Taylor, A, M. (1995). **Peopling the Pampa: On the Impact of Mass Migration on the Rive Plate, 1870-1994**. Online Available: <http://www.nber.org/papers>. (Accessed on 15 June 2007).

Tsikata, M. (1999). **Liberalization and Trade Performance in South Africa**. Online Available:<http://www.unctad.org/en/docs/gdsafrica2003>. (Accessed on 10 July 2007).

UNFPA. (2005).**Meeting the Challenges of Migration**. Available Online:<http://www.un.org>. (Accessed on 5 August 2007).

Venturini, A and Villosio, C. (2004). **Labour Market Effects of Immigration: An Empirical Analysis based on Italian Data.** Available Online:<http://www.International Labour Organisation.org/public>. (Accessed on 10 April 2007).

Visco, I. (2000). **Immigration, Development and the Labour Market.** Online Available: <http://www.oecd.org/dataoecd>. (Accessed on 15 August 2007).

Winegarden, C, R and Khor, L. (1991). **Undocumented Immigration and Unemployment of U.S Youth and Minority: Econometric Evidence.** *The Review of economics and Statistics*, 73(1):105-112.

World Bank. (2003). **Migrant Labour Remittances in Africa: Reducing Obstacles to Development Contributions.** Online Available: <http://www.worldbank.org.afr>. (Accessed on 10 September 2007)

Yomogida, M and Zhao, L. (2005). **The Labour Market Effects of Fragmentation, Outsourcing and Immigration: Two Sides of the Same Story.** Online Available: <http://ctr.ust.nz>.(Accessed on 10 October 2007).

Zhang, X. (2003). **Labour Migration and Wage Inequality.** Online Available: <http://www.apeaweb.org>. (Accessed on 15 October 2007).

## Appendix

**Table 5.1 General Model for Unemployment**

Variable	Coefficient	t-value
Constant	-0.0230095	-0.352
DLUnemployment <sub>t-1</sub>	0.460173	1.94
DLUnemployment <sub>t-2</sub>	0.511896	2.35
DLWages	-6.21105	-3.38
DLWages <sub>t-1</sub>	-2.40090	-1.93
DLWages <sub>t-2</sub>	0.445860	0.255
DGDP	-0.106782	-3.80
DGDP <sub>t-1</sub>	-0.0573277	-2.20
DGDP <sub>t-2</sub>	-0.0243860	-1.15
DLImmigration	0.113884	0.957
DLImmigration <sub>t-1</sub>	-0.115072	-0.870
DLImmigration <sub>t-2</sub>	-0.343507	-1.67
DLInflation	-0.574127	-2.28
DLInflation <sub>t-1</sub>	-0.617512	-2.51
DLInflation <sub>t-2</sub>	-1.42022	-2.54
ECT <sub>t-1</sub>	-0.312395	-1.54

**Table 5.2 General wages model**

Variable	Coefficient	t-value
Constant	-0.0118467	-1.96
DLWages <sub>t-1</sub>	-0.295876	-1.14
DLWages <sub>t-2</sub>	0.204870	0.835
DLUnemployment	-0.0916079	-3.50
DLUnemployment <sub>t-1</sub>	0.0657133	2.31
DLUnemployment <sub>t-2</sub>	0.0730253	2.68
DGDP	-0.0146700	-3.52
DGDP <sub>t-1</sub>	-0.00988363	-3.60
DGDP <sub>t-2</sub>	-0.00583552	-2.60
DLImmigration	0.0226083	1.49
DLImmigration <sub>t-1</sub>	-0.0218841	-1.34
DLImmigration <sub>t-2</sub>	-0.0642060	-2.04
DLInflation	-0.0952689	-3.80
DLInflation <sub>t-1</sub>	-0.105090	-1.98
DLInflation <sub>t-2</sub>	-0.239140	-3.53
ECT <sub>t-1</sub>	-0.00375649	-0.0122

**Table 5.3 Data for Estimation**

<b>Year</b>	<b>Immigration</b>	<b>Wages</b>	<b>GDP Growth</b>	<b>Unemployment</b>	<b>Inflation</b>
<b>1980</b>	29365	73.68		9.8	13.8
<b>1981</b>	41542	80.85	5.36	6.8	15.2
<b>1982</b>	45784	84.6	-0.38	9.0	14.7
<b>1983</b>	30483	80.80	-1.85	14.4	12.3
<b>1984</b>	28793	85.3	5.1	12.4	11.5
<b>1985</b>	17284	80	-1.21	23.2	16.3
<b>1986</b>	6994	79.43	0.02	28.4	18.6
<b>1987</b>	7953	80.45	2.1	24.4	16.1
<b>1988</b>	10400	81.45	4.2	19.3	12.8
<b>1989</b>	11270	81.45	2.39	16.1	14.7
<b>1990</b>	14499	81.23	-0.32	22.3	14.4
<b>1991</b>	12397	80.3	-1.02	21.1	15.3
<b>1992</b>	8686	85.1	-2.14	21.0	13.9
<b>1993</b>	9824	83.48	1.23	22.5	9.7
<b>1994</b>	6398	87.45	3.23	19.1	9
<b>1995</b>	5064	88.95	3.12	18.8	8.6
<b>1996</b>	5407	90.95	4.31	21.0	7.4
<b>1997</b>	4103	93.53	2.65	22.9	8.47
<b>1998</b>	4371	99.68	0.52	26.1	6.95
<b>1999</b>	3669	99.8	2.36	23.3	6.9
<b>2000</b>	3053	100	4.15	25.8	6.52
<b>2001</b>	4832	101.75	2.74	29.4	6.14
<b>2002</b>	6545	100.13	3.56	30.4	9.2
<b>2003</b>	10578	102.13	2.81	28	5.8
<b>2004</b>	83264	110	3.71	26.2	1.4
<b>2005</b>	94679	118	2.83	26.7	3.4
<b>2006</b>	10494	120	4.5	25.5	3.7