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Globalisation, Labour Mobility and the Economics of Emigration: The Case of South Africa

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ABSTRACT

This paper outlines the major emigration trends over the last twenty years. It argues that the two major causes of emigration have been real wage differentials and falling immigration restrictions in the major destination countries. The paper concludes by outlining some policy interventions that can be instituted to decrease emigration.

1. INTRODUCTION

In an increasingly globalized world, developed countries are lowering their barriers to skilled immigration from developing countries. This poses challenges for all developing countries especially countries such as South Africa who are experiencing a substantial brain drain. This paper introduces the topic by outlining reasons for emigration, its impact on the South African economy and possible interventions that policy makers can make to decrease emigration.

This paper is primarily aimed at policy makers. All details about data and the model presented are discussed in the appendix.

2. TRENDS IN EMIGRATION FROM SOUTH AFRICA

This chapter introduces the topic. It shows the following:

- Trends in emigration from South Africa;
- Who is emigrating

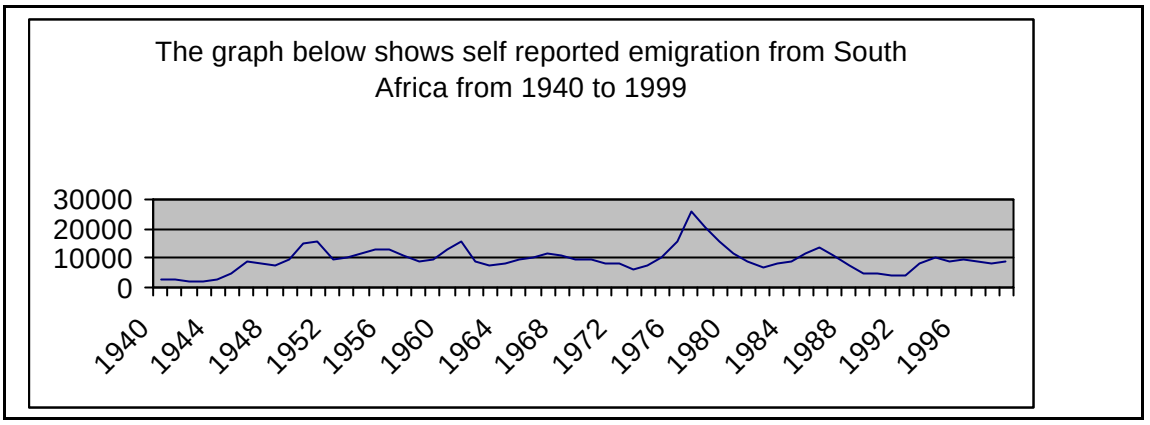
This section provides the groundwork for the discussion in the rest of the paper.

2.1 Emigration trends

There are two sources for time series data on emigration. The first is self reported emigration at border posts (including airports). This data is published by the Central Statistics services. This data suffers from the cost associated with reporting that one expects to emigrate. The cost being that the emigrant has to satisfy the state that they are not leaving behind unpaid debts and the like. Furthermore there is evidence that the data is being collected less accurately over time. The second source of data is the records of *immigration* in the destination countries. These data are less open to the problem of self-reporting since the typical South African emigrant is well educated and wants to enter the formal economy of the destination countries. Such emigrants have a strong positive incentive to report immigration (Kaplan et al. 1999). The Central Statistics Services is expected to be less accurate but shows emigration trends back to the 1940's and includes more detailed information on self declared emigrants. The data from the destination countries is more accurate but is only available back to 1987 for the USA and Canada and 1980 for Australia, New Zealand and the United Kingdom.

The graph below shows self reported emigration from South Africa back to the 1940's.

Figure 1: The graph above shows the self-declared emigrants per year from 1945 to 1999.

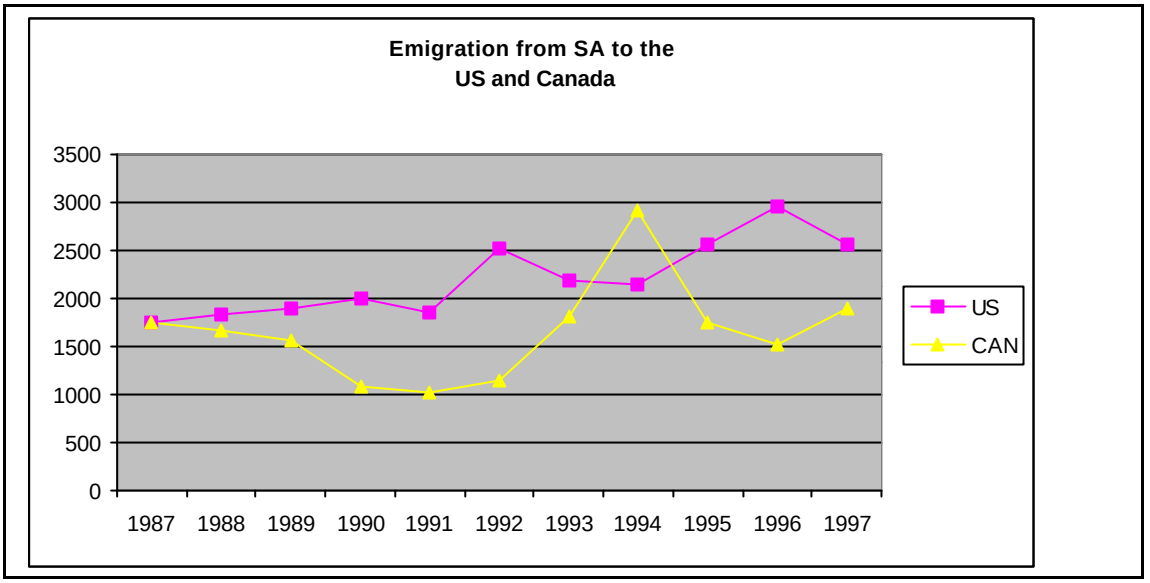


Source: Central Statistics Service

The graph clearly shows peaks after significant political events. The trend suggests that the major political events of the last 50 years have all been associated with peaks in emigration. The imposition of Apartheid in 1950, the Sharpeville massacre and the banning of the ANC in 1962, the Soweto riots in 1976 and the Rubicon have all been associated with local peaks. Since these figures reflect self reported emigration they may reflect a certain amount of "protest reporting" as emigrants showed their rejection of the state and society. The fact remains though that these figures suggest that the highest level of emigration was experienced during the 1970's and not the 1990's as is commonly suggested.

The evidence from the destination countries is more accurate but covers a limited number of years. The self reported emigration figures suggest that the UK, New Zealand, Australia, the United States and Canada absorbed ¾ of emigrants (Kaplan et al, 1999). Additionally survey evidence suggests that these are the most desirable destinations (Mattes and Richmond, 2000). The graph below shows emigration figures to the US and Canada, the two smallest emigration destinations (Emigration is defined by the UN as an expected stay of two years or more) (Kaplan et al. 1999).

Figure 2: The number of South Africans emigrating to the United States and Canada from 1987 to 1997.



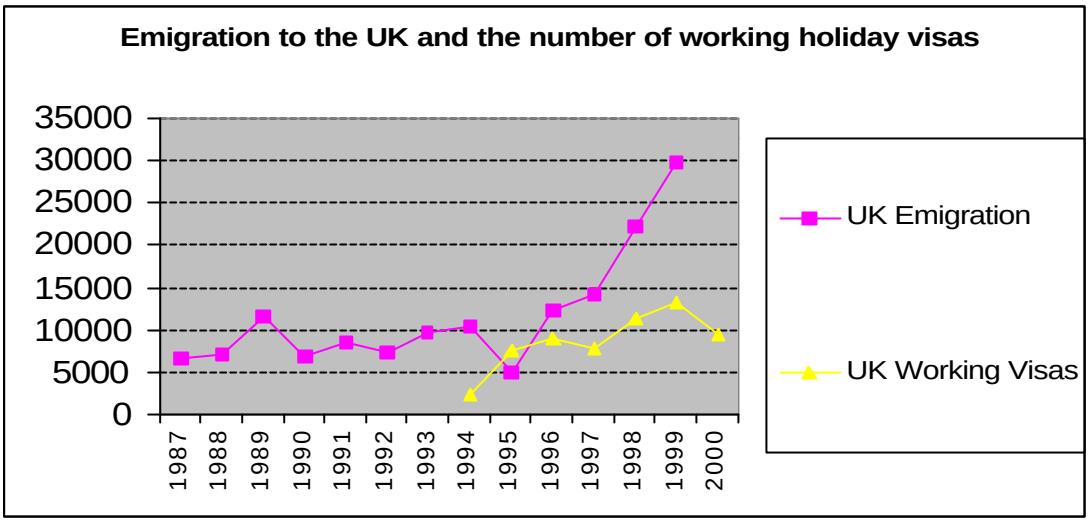
Source: Canada (Kaplan et al, 1999), Source for USA (INS service USA)

Trends in emigration to the UK are shown in the graphs below. The first graph shows the number of immigrants to the UK and the number of South Africans going across on working holiday visas (these are not classified as immigrants by UK authorities). The second graph shows the number of South Africans being granted permanent residence in the UK or Grant of Settlement.

The graph below shows emigration to the UK from 1987 to 1999 (UK immigration authorities) and the number of South Africans going across on working holiday visas (South Africans were only allowed onto the working holiday visa program after 1994 when South African entered the commonwealth).

The graph below depicts the number of South Africans emigrating to the United Kingdom from 1987 to 1999 and the number of South Africans going to England on Working holiday visas.

Figure 3: South African emigration to the UK in figures

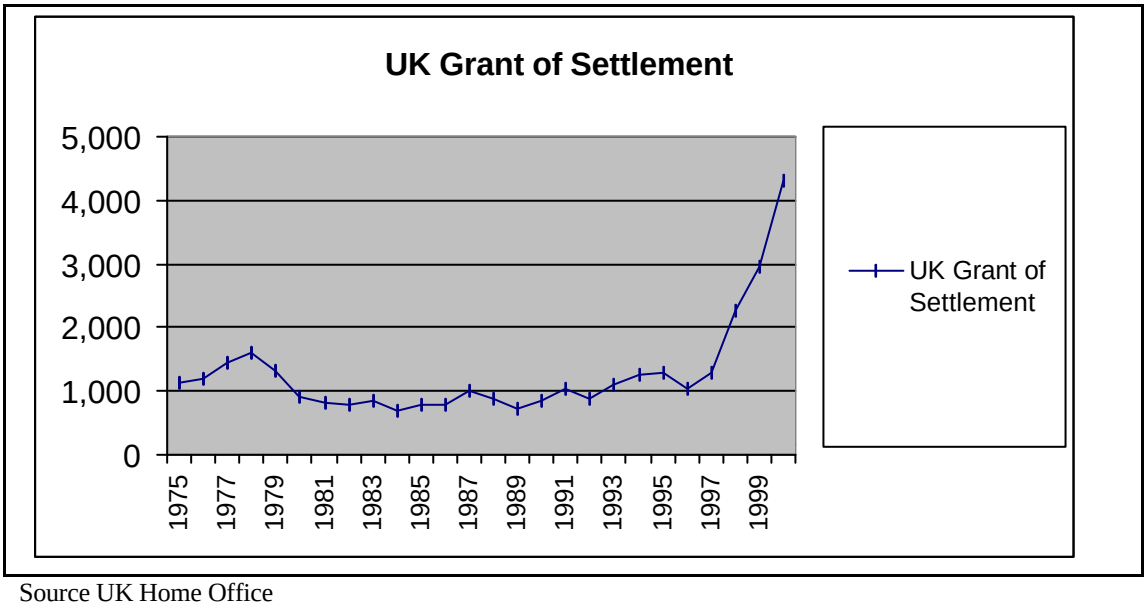


Source: UK Home Office

The graph above shows a dramatic increase in the number of South Africans emigrating to the UK during the late 1990's.

The graph below shows the number of South Africans granted permanent residence in the UK or Grant of Settlement.

Figure 4: The number of South Africans given permanent residence in the UK

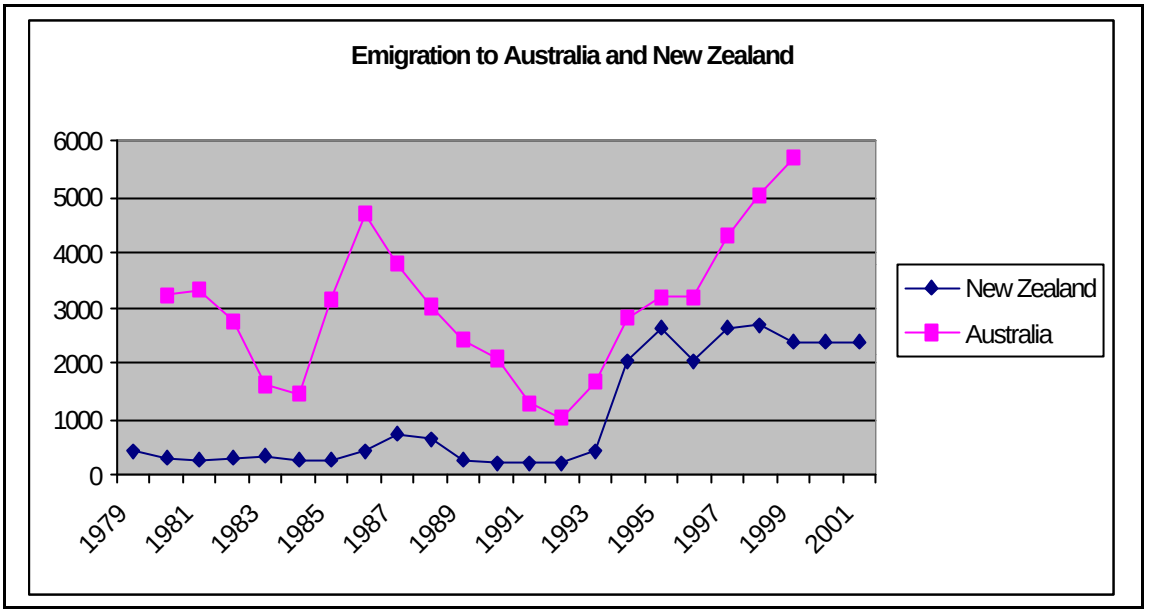


Source UK Home Office

The graph again shows a dramatic increase in the late 1990's.

The graph below shows New Zealand and Australian emigration figures from 1980 to 2000 and 2001.

Figure 5: The number of South Africans emigrating to Australia and New Zealand from 1980 to 2000.

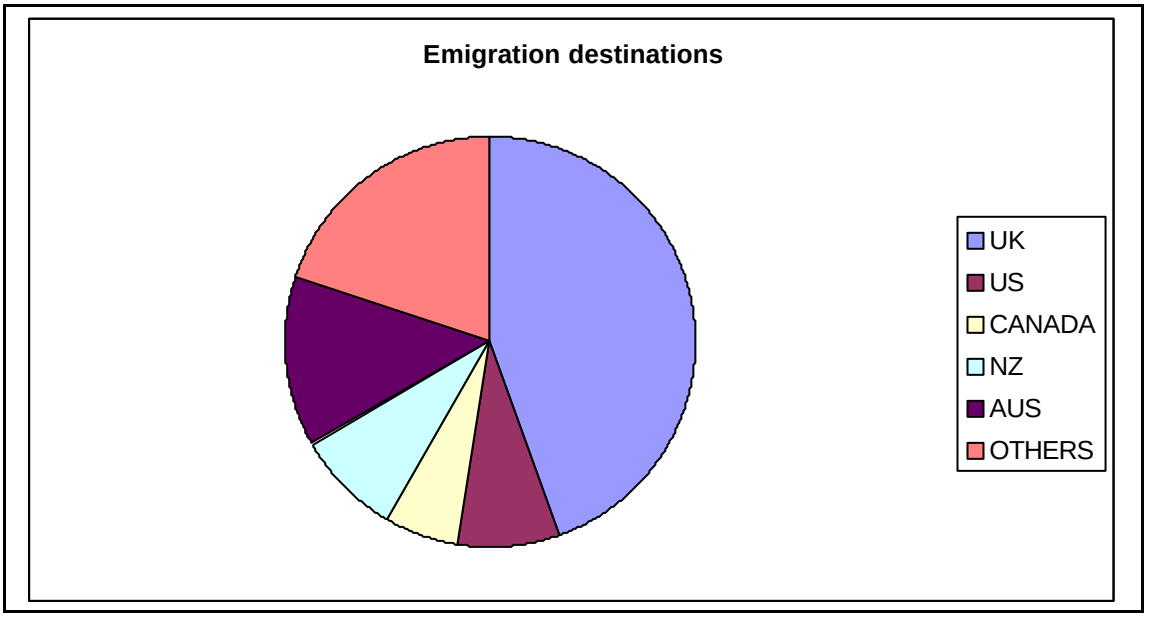


Source: New Zealand Statistical Services and the Australian department of migration and multicultural affairs.

The three graphs above clearly demonstrate an increasing rate of emigration from South Africa during the 1990's.

The proportion of emigrants going to the different destination countries in 1997 is shown below: (figures from Kaplan et al, 1999).

Figure 6: The proportion of South Africans emigrating to the different destination countries.



As the graph shows the two destination countries with the highest emigration figures are Australia and the United Kingdom. This paper will evaluate the impact on real wages and other economic variables reasons for emigration to the UK, USA, Australia and New Zealand. Some of the discussion will also include Canada.

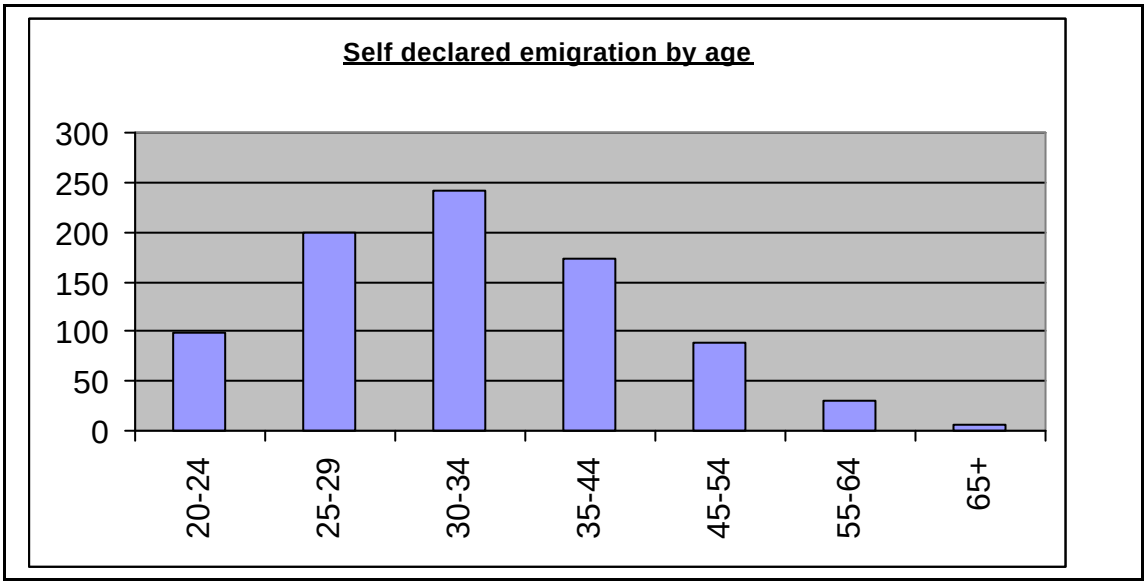
2.2 Skill levels of emigrants

Of those emigrating approximately 45% are professionals, 15% are managers and 33% have other qualifications (Kaplan et al, 1999). Thus the emigration trends described above represent a brain drain in the sense that the most educated members of South African Society are leaving. (Kaplan et al, demonstrate that South Africa is experiencing a brain drain in the sense that South Africa has had a net loss in skilled individuals due to migration.

2.3 Age profile of emigrants

The graph below shows the age of profile of self-declared emigrants (Central Statistical Services).

Figure 7: The age profile of self declared emigrants



The graph shows a typical age/emigration profile. Emigration peaks in the early 30's and drops off with the older age groups. Younger emigrants are less likely to report that they are emigrating therefore one would expect the true age profile to show a younger profile.

2.4 Survey on Skilled South Africans

A study by Mattes and Richmond in Crush et al. (2000) surveyed currently employed skilled South Africans. The survey presents a wide range of information pertinent to skilled emigration.

2.4.1 Survey Methodology

The survey surveyed a randomly selected representative sample of skilled South Africans. The definition of a skilled South African was:

1. A South Africa citizen
2. 20 years or older
3. Who has matriculated and possesses a Technikon diploma or university degree
4. Who is currently economically active.

The AMPS survey was used to establish that the size of this skilled population in South Africa is 1.6 million. 4250 telephone calls were made to obtain a representative sample of 725 interviews. The results of the survey are discussed below.

2.4.2 Survey results

The survey covered a wide range of issues. The ones discussed here are:

1. Friends and family overseas; and
2. Steps taken to emigrate.

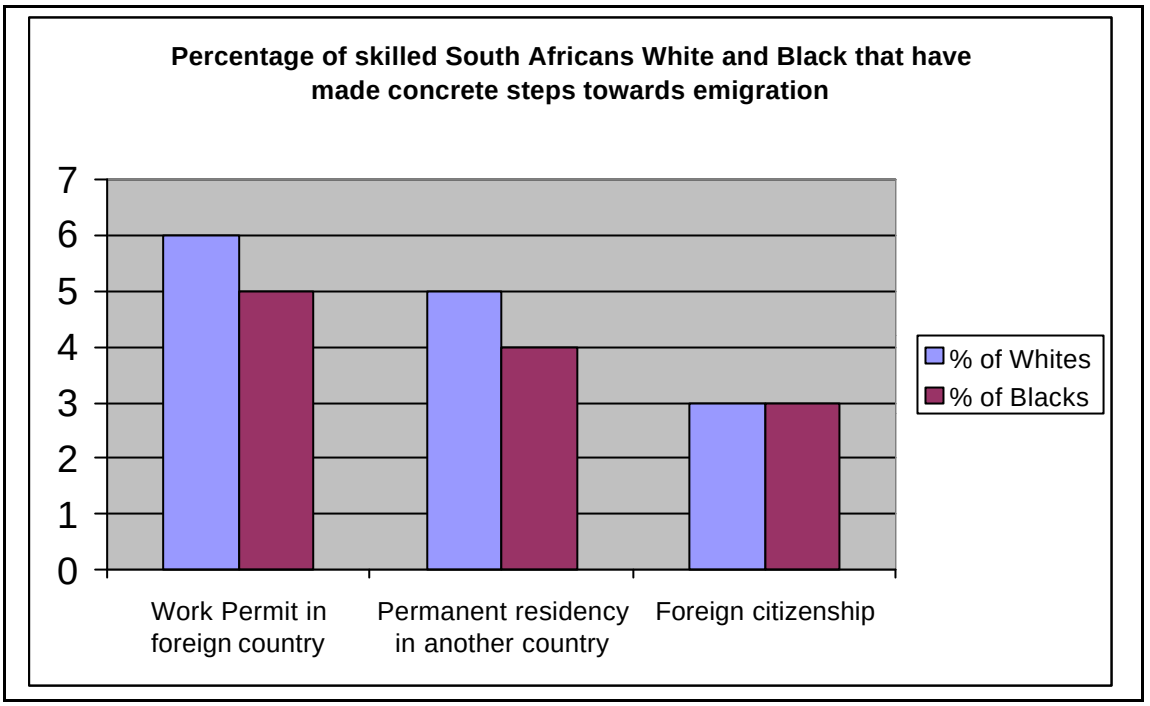
2.4.2.1 Friends and family overseas

Substantial past emigration from South African has lead to South Africans having extensive contacts overseas. Crush reports that 19% of skilled South Africans had a member of their immediate family overseas, 36% had a member of their extended family overseas, 59% had a close friend overseas, 40% knew co-workers who had emigrated and 57% knew someone in their profession that had emigrated. 27% of skilled South Africans are in contact with overseas professional organizations, and 7% are in contact with overseas recruitment agencies. Skilled South Africans main contact with overseas is through friends, acquaintances and family.

2.4.2.2 Applications for Emigration documentation

The number of skilled South Africans who are in the process of applying for overseas official documentation is a good measure of how many skilled South Africans are readying themselves to emigrate. The graph below shows the proportion of skilled South Africans who are applying for various sorts of documentation.

Figure 8: The proportion of skilled South Africans who have applied for foreign documentation by race group.



Source (Mattes and Richmond. 2001)

The graphs demonstrate that there is little difference between the proportion of skilled black and white South Africans emigrating. In numerical terms it implies that approximately 80 000 skilled South Africans are applying for work permits, 64 000 are applying for permanent residency and 48 000 are applying for foreign citizenship.

These numbers are much larger than the actual number of skilled South Africans emigrating. This implies that a substantial proportion of South Africans who have applied to emigrate are not emigrating. Combined with the large numbers of foreign passport holders in South Africa these statistics suggest the possibility of a "emigration pool" who have applied to emigrate but do not actually do so.

3. WHY ARE PEOPLE EMIGRATING?

This section outlines the impact of standard economic factors on emigration. This section does not discuss political uncertainty, as discussed above political uncertainty has historically had a large impact on emigration. Furthermore it does not discuss the impact of violence on emigration. These questions are not discussed due to space restrictions since each merit a paper in their own regard.

3.1 Emigration theory

The theory introduced in this chapter provides the basis for empirical discussions later in the paper.

This paper uses the human capital approach. Sjaastad in his 1962 paper introduced the method of analyzing the migration decision as an investment decision (Sjaastad, 1962). This was a departure from previous theory that analyzed migration as a response to differences in relative wage rates. Sjaastad argues that the migrant invests in the costs of migrating in the hope of receiving a stream of benefits over his lifetime that provides a positive return to the costs. Sjaastad discussed a wide range of costs and benefits.

3.2 The costs of migration

The costs of migration that Sjaastad discusses include the actual monetary outlay that is necessary to move as well as the opportunity cost of earnings foregone while the migrant moves and searches for a new job. There are also the psychological costs of leaving family, familiar surroundings and people. Traveling to visit family and friends can impose an additional cost of living in the new location.

3.3 The benefits of migration

The benefits of migration include an increase in the migrant's real earnings stream. This includes benefits from higher lifetime wages, changes in the cost of employment and benefits that the migrant receives in his role as consumer (through differences in the prices of goods that the migrant will consume). Furthermore the migrant faces a positive or negative benefit from his preference for his destination over his former residence. Finally there is the satisfaction or dissatisfaction that the migrant accrues in the process of traveling to his new place of residence (Sjaastad, 1962).

3.4 The impact of the exchange rate on the cost of emigration

South Africa has experienced a series of currency collapses and currently has one of the weakest exchange rates in the world. Many have suggested that the weakening exchange rate will increase emigration. Theoretically depreciation in the currency both increases the benefits from emigrating but also *increases* the costs of emigration. Thus a depreciation does not have a clear impact on emigration.

On the one hand South Africa's weak real exchange rate "exchange rate" means that South African wages do not purchase as many tradable goods (imported or exportable goods) as wages in the destination countries. At the same time a weak real exchange directly increases the costs of emigrating by increasing the *Rand cost* traveling to the destination country (as well as living there) and decreasing the *Dollar or Pound value* of many South African assets.

Broadly speaking depreciation in the currency will increase the benefit of emigrating for the young (who have few assets) but increasingly decrease the benefit of emigrating as people get older and tend to accumulate South African assets.

3.5 The impact of unemployment on expected real wages

Todaro in his 1969 paper pointed out that the real expected wage for a migrant in an area needs to be adjusted for the likelihood of finding employment. For instance

during the Great Depression when wages in the rural areas of the United States were lower than in the urban areas, high urban unemployment pushed workers from the urban to the rural areas (Todaro, 1969).

3.6 Restrictions on emigration

An increasingly globalized world has experienced a fall in tariffs and the dropping of many restrictions on the flow of capital. At the same time the English speaking countries, which are the major destination countries for South Africans, have increasingly opened their doors to skilled immigrants. This reflects the growing globalization of the international skilled labour market.

3.7 Criteria for allowing immigrants into the destination countries

There are three systems of criteria for selecting which immigrants are allowed into the destination countries:

- The Points system (used by Australia, New Zealand, Canada and increasingly the UK)
- The UK system which emphasizes the heritage links of the potential immigrants with the UK
- The US system which is uniquely complicated and inconsistent

The point system grades immigrants for certain characteristics. Those with enough points are allowed in. Points are provided for family, skills, age, work experience, language and whether or not a job has been offered in the destination country (as well as other factors). The points system is aimed at allowing skilled immigrants in who have a good chance of success in the destination countries. In many respects the points system mirrors the incentives that migrants already face as described in the theoretical discussions above.

The United Kingdom emphasises lineage and connections to the UK. In order of ease of access to the UK, the UK classifies potential immigrants in the following ways:

- People with UK or EU citizenship. Those with UK or EU citizenship are allowed into the UK with no restrictions. It is estimated that 800 000 South Africans hold British passports and many more hold EU passports (Van Rooyen, 2001). Those with UK or EU citizenship *probably* make up a substantial proportion of those emigrating to the UK.
- People with UK grandparents are almost *automatically* granted work permits in the UK after four years. This may well include a multiple more South Africans than the 800 000 passport holders mentioned above.
- Citizens of the Commonwealth are granted easier access to the UK as well as working visas.

South Africa is in the unenviable position of having many citizens (more than 800 000) who have almost unrestricted access to the UK labour market.

The United States has the most complicated least transparent immigration policy of all the destination countries. Migrants can enter America illegally, through a lottery, through an employer, through family contacts and many, many other ways. The US has no comprehensive integrated immigration policy (OECD, 2000) and (Van Rooyen, 2001). Suffice to say that US immigration is predominantly illegal or family based. Only a tiny proportion of US immigration is made up of individual skilled immigrants.

3.8 Policy trends in the destination countries

The 1990's has seen the "drying up" of the international pool of skilled workers who want to emigrate. The East Asian miracle has lead to increasing living standards in many of the countries such as Korea and Taiwan that traditionally supplied many of the skilled immigrants. In response to this as well as a realization of the importance of human capital to economic growth has lead all the destination countries to try increase skilled immigration during the 1990s.

The Australian government has attempted to increase the number of skilled migrants and inhibit the immigration of family members. It has increased the quota of skilled immigrants by 5000 places and has implemented measures to facilitate the settlement in Australia of foreign graduates of Australian Universities. Australia is also extending its working holiday programme. Although skilled migration has not increasing dramatically, Australian immigration policy has been increasingly focused on facilitating skilled immigration (OECD, 2000) (Reitz, 1998).

Skill based immigration (called economic immigration in Canada) peaked in the mid 1990's but collapsed dramatically in the late 1990's (probably as a result of the East Asian crises). Canada has attempted to restrict family based immigration and facilitate skilled-based immigration. While immigration has fallen during the late 1990's this has been associated with an increasingly welcoming environment for skilled immigrants in Canada (OECD, 2000).

New Zealand implemented the points system in 1991, approximately 20 years after Australia and Canada (Statistics New Zealand, 2000). This lead to an increase in immigration to New Zealand during the early 1990's. New Zealand economic immigration peaked in the mid 1995 after which English language requirements were imposed on immigrants (a factor unlikely to impact on most South African emigrants). While immigration had fallen below 30 000 immigrants a year by the end of the 1990's the New Zealand's governments target for immigration has remained at 38 000. Thus similar to Canada and Australia a fall in immigration to New Zealand has been associated with increasingly easy entrance for skilled migrants (OECD, 2000).

Britain started the 1990's with a hostile official position to immigration. This position has relaxed during the 1990's as southern England has been experiencing a tightening of the labour market and increasing skills shortages. Towards the end of the 1990's the UK had increasingly been implementing measures to facilitate further immigration. In line with this trend immigration to the United Kingdom has been growing. From 1995 to 1998 immigration increased from 320 to 401 thousand and

working holiday visitors to the UK have increased from 23 200 in 1990 to 40 800 in 1998. The make up of the immigrant flow has changed dramatically. Previously migration to the United Kingdom was heavily biased towards non-working migrants. During the late 1990's there has been a shift towards parity between working and non-working migrants. This reflects a dramatic shift in the type of immigration. In May 2000 the UK government announced a fast-track permit system would be introduced in order to speed up the recruitment of workers by firms that were experiencing skills shortages. Migrants could apply for a work permit on their own behalf instead of it being required that a firm apply on their behalf. The UK government was also implementing measures to make it easier for foreign graduates of UK Universities to stay on after graduation (OECD, 2000).

From 1992 to 1998 the number of employment-based visa into the United States increased from 54 thousand to 140 thousand. The family of the skilled migrant takes up a large number of these visas and so during the 1990's only 5% of immigration into the United States was for employment purposes (as opposed to refugees and family based migrants). There has been increasing pressure to increase the number of H1-B visas for highly skilled workers. The annual quota of these visas has been increased from 115 to 200 thousand from 2000 to 2001 (OECD, 2000). Although family and refugees dominate immigration to the United States there have been increasing quotas for skilled and employment based immigrants.

This section has shown that:

1. Immigration policy is broadly in line with the incentives discussed in the theoretical chapters
2. The destination countries were opening their borders to skilled immigrants during the 1990's.

Therefore the institutional requirements were facilitating increased emigration from South Africa during the 1990's.

3.9 The impact of real wages and other economic factors on emigration from South Africa

This section develops an index or model reflecting the financial incentive to emigrate. The motivation for the index is fourfold.

1. The lack of data makes econometric analysis difficult and the results sensitive[1]. Given the expected and experienced problems with econometric analysis the index was created as a measure of the importance of financial incentives in the emigration decision. Thus the index provides a measure of the importance of financial incentives versus other causes such as violence. .

The third reason is that the index can be used to analyze factors such as the age profile of emigrants to certain countries and other implications of the theoretical section.

[1] The author has done extensive econometric testing using panel data methods. The only significant variable found was unemployment. Forty series from the World Bank and IMF data bases were tested.

3.10 Theoretical Section

From the theoretical section the incentive to emigrate is taken to be a function of:

- Wages in dollars;
- Wages in purchasing power parity terms;
- Unemployment; and
- Savings.

Therefore the incentive to emigrate is made up of the difference between:

- Dollar wages in SA and Dollar wages in the destination country.
- PPP wages in SA and PPP wages in the destination country.
- Unemployment in SA and unemployment in the destination countries.
- The value of savings in SA versus savings in the destination countries.

These factors are placed in a model, which is outlined in the appendix. These factors are placed into Excel in the form of equations to work out the PV of emigrating for migrants from the age of 22 (the assumed beginning of their working life) to 65 (the assumed age of retirement). These PV amounts are then used to create an index of the financial incentives to emigrate. The assumptions made, as well as the source of the data, are described in the appendix.

3.11 Weighting of different variables

Different variables into the model can be weighted using weightings. Weightings are included in the model so that the model can be calibrated and it allows the relative importance of different variables to be evaluated through a sensitivity analysis.

The model was initially calibrated at 30% of income spent on tradable goods and 70% spent on non-tradable goods. Furthermore the interest rate is weighted at 10%. As shown in the sensitivity analysis these weightings achieve the best fit.

In an ordinary least squares model the weightings of the different variables are inherently worked out by solving the equations[2]. This index uses a similar technique except the weightings are worked out through a sensitivity analysis.

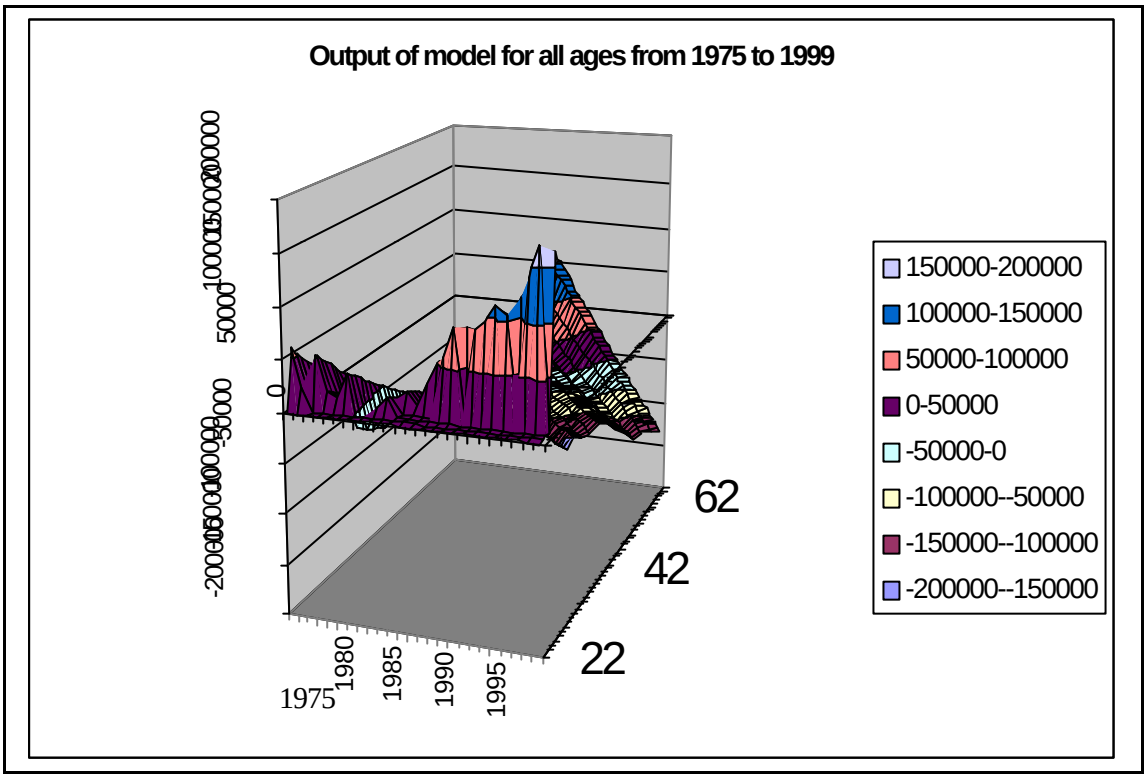
The weightings allow one to strip out certain aspects of the index and so simplify it. For instance the index includes a period of search in the destination country. The weightings allow one to remove this period of search and see how it affects the behavior of the index. In this way one is able to evaluate the importance of every aspect of the model to the index's fit with the series.

3.12 Output from the excel model

[2] Econometric results proved to be highly sensitive and in cases seemingly spurious. Fixed and Random effects models were used.

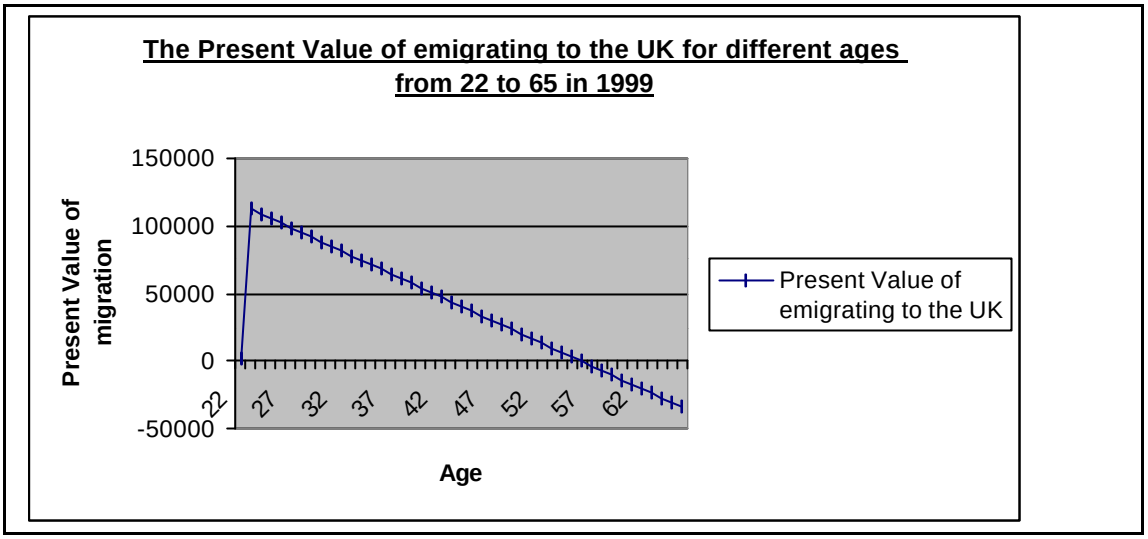
The Excel formulas work out the present value of immigrating into the destination countries for all ages from 22 to 65. This output from 1975 to 1999 for all ages is shown below. The graph below shows the incentive to emigrate in 1999 from 22 to 65 for the UK.

Figure 9: The incentive to emigrate at all ages from 22 to 65 from 1975 to 1999 in PPP terms in 1975 Dollars.



The graph below shows the initial period in which migrants need to save money in order to emigrate (in this case a year) as well as the cost of emigrating at older ages. It also shows that the incentive to emigrate is greater for younger workers.

Figure 10: The present value of emigrating to the UK

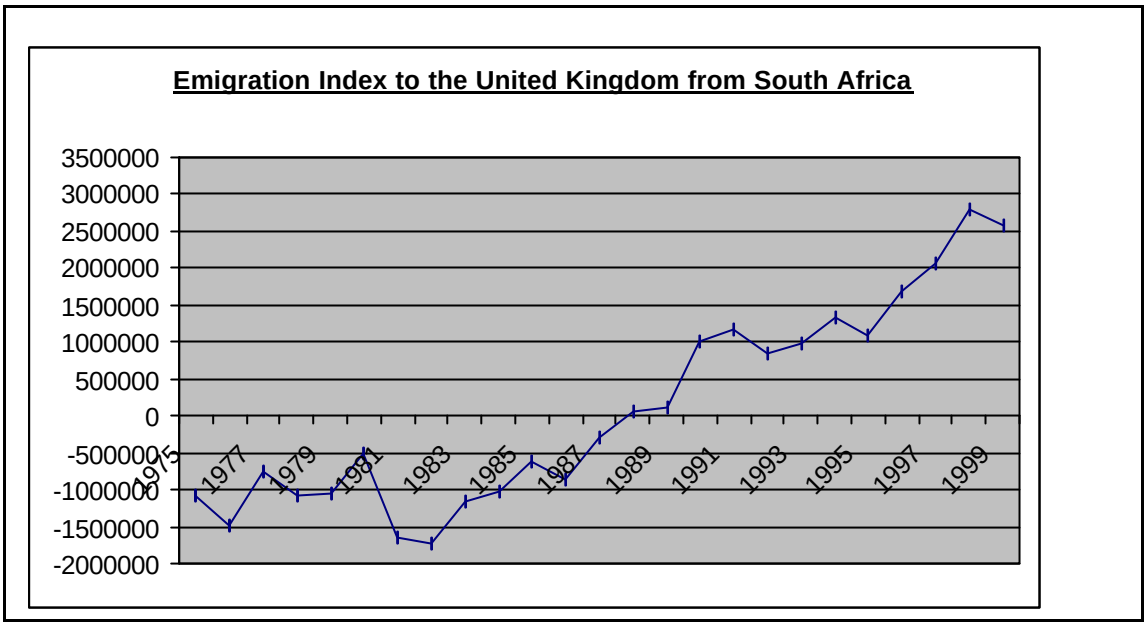


3.13 Emigration index

The emigration index is worked out by adding all the present values of emigrating for all ages from 22 to 65. Thus it works out the balance of incentives across all ages. The first graph shows all the values if positive and negative values are used. The second graph shows the value of the index if only positive incentives to emigrate are summed. Using positive present values makes more economic sense. People are not expected to emigrate in response to negative financial incentives. Therefore only positive financial incentives should result in emigration. Thus by adding positive financial incentives one models the financial incentives that one expects people to be responding to and emigrating as a result of. By ignoring the negative incentives one is taking out financial disincentives that would not be causing emigration in the first place.

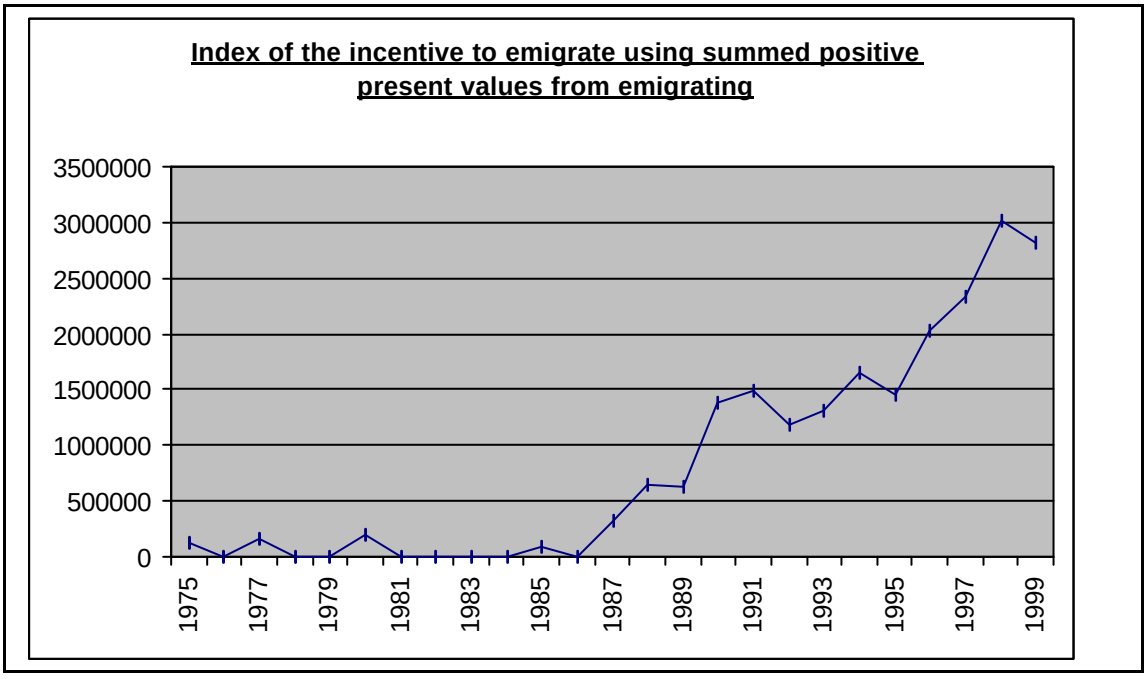
The graph below shows the sum of all incentives to emigrate including both positive and negative returns from emigrating. It reveals that values of the emigration index become positive in the late 1980's.

Figure 11: The emigration index: UK from SA



The graph below shows the summed positive incentives to emigrate. Similarly to the above graph it only results in a positive value in the late 1980's.

Figure 12: The summed present values from emigrating



The two versions of the index result in similar trends. Both show a large increase in the incentive to emigrate after the late 1980's. The analysis below uses the second measure.

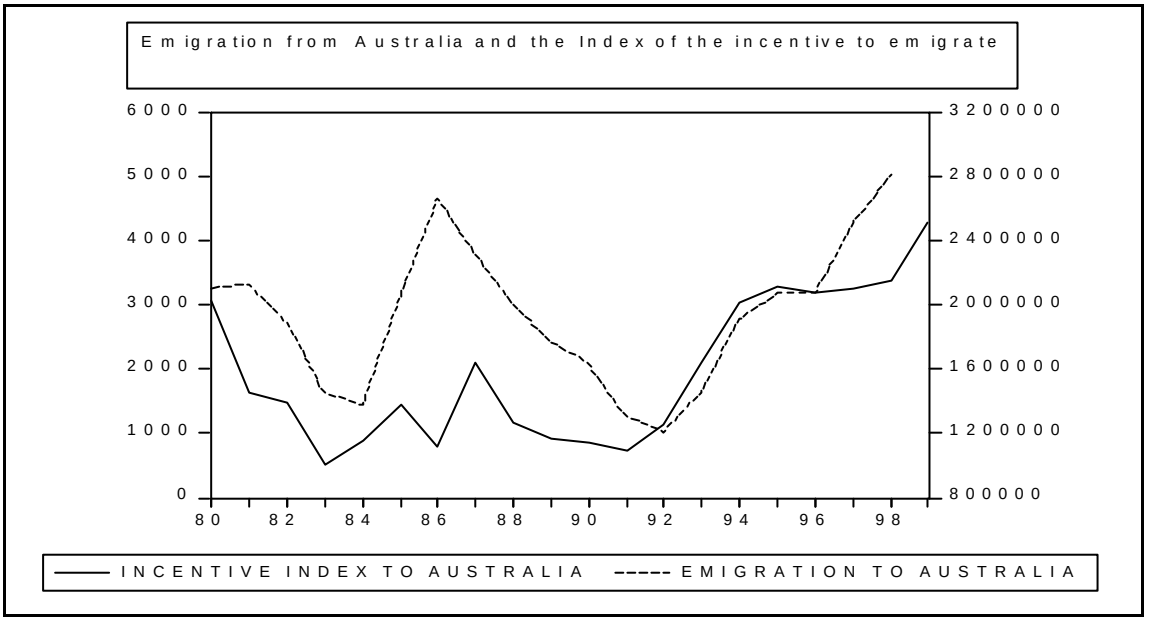
3.14 Using the index to predict emigration

The index below is used to predict emigration from South Africa for four of the major destination countries, the UK, USA, New Zealand and Australia.

3.14.1 Australia

The graph below shows the incentive to emigrate to Australia (solid line) and emigration to Australia from South Africa (dotted line). The left axis shows emigration numbers, the right the financial incentive to emigrate. The reveals that the incentive index to emigrate to Australia and actual emigration to Australia have a similar trend

Figure 13: Emigration from Australia and the emigration index

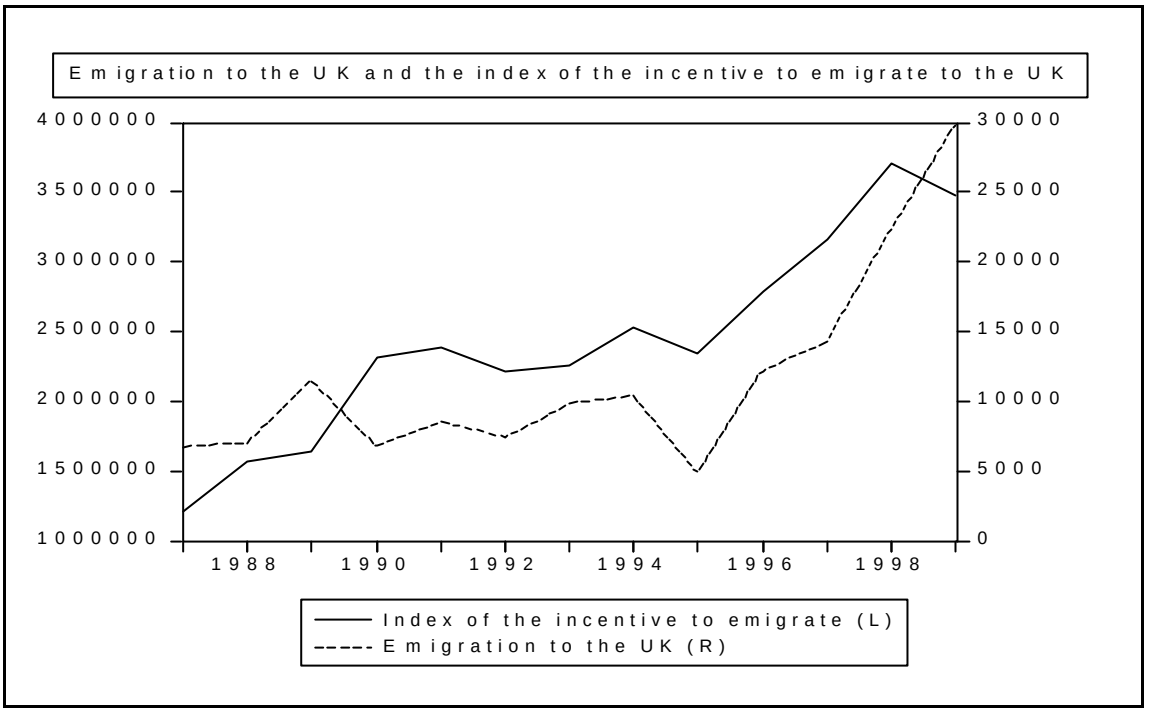


The graphs strongly suggest a close relationship between the incentive to emigrate to Australia and levels of emigration.

3.14.2 United Kingdom

The graph below shows the incentive to emigrate to the UK (solid line) and actual emigration to the UK (dotted line). The graph reveals that there was a relatively close relationship between the incentive to emigrate to the UK and actual emigration to the UK.

Figure 14: Emigration to the UK and the emigration index

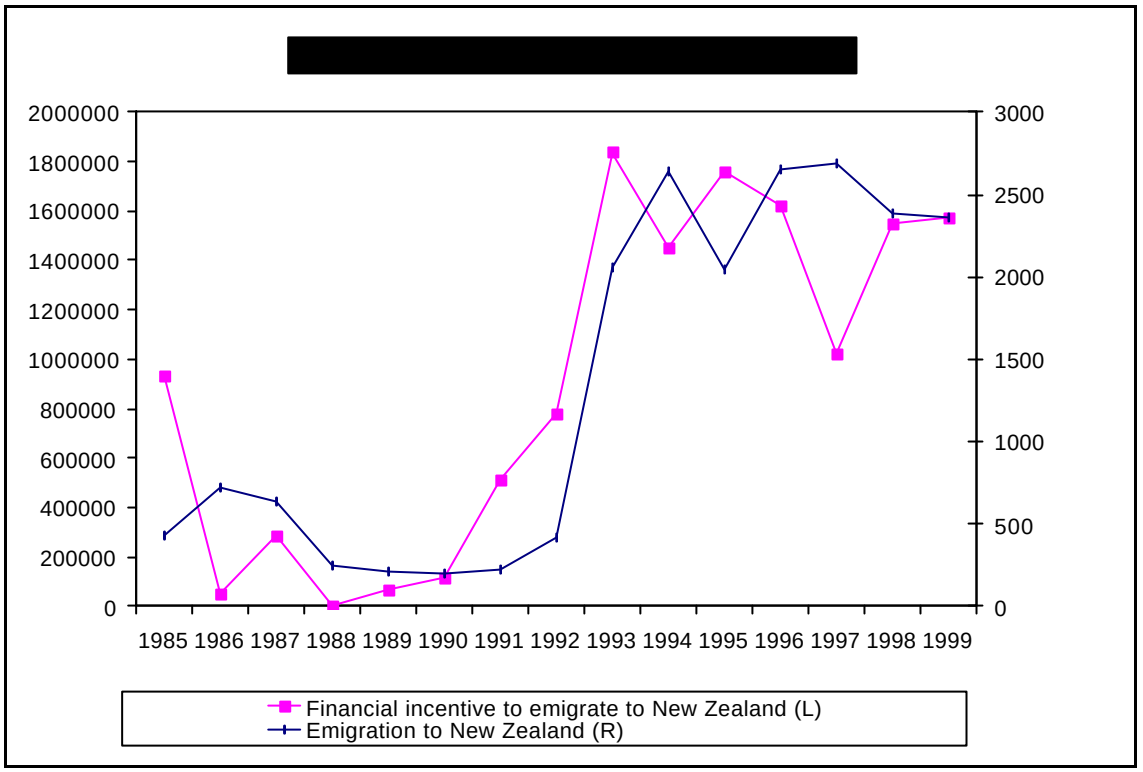


The graph shows a similarly strong relationship between the emigration index and actual emigration. Interestingly emigration to the UK continued during the late 1990's despite a fall in the incentive to emigrate

3.14.3 New Zealand

The graph below shows the incentive to emigrate index to New Zealand. The incentive to emigrate is the solid line whereas actual emigration to New Zealand is shown with a dotted line. The graph shows a reasonably strong relationship between the incentive to emigrate to New Zealand and actual emigration.

Figure 15: Emigration to New Zealand and the emigration index

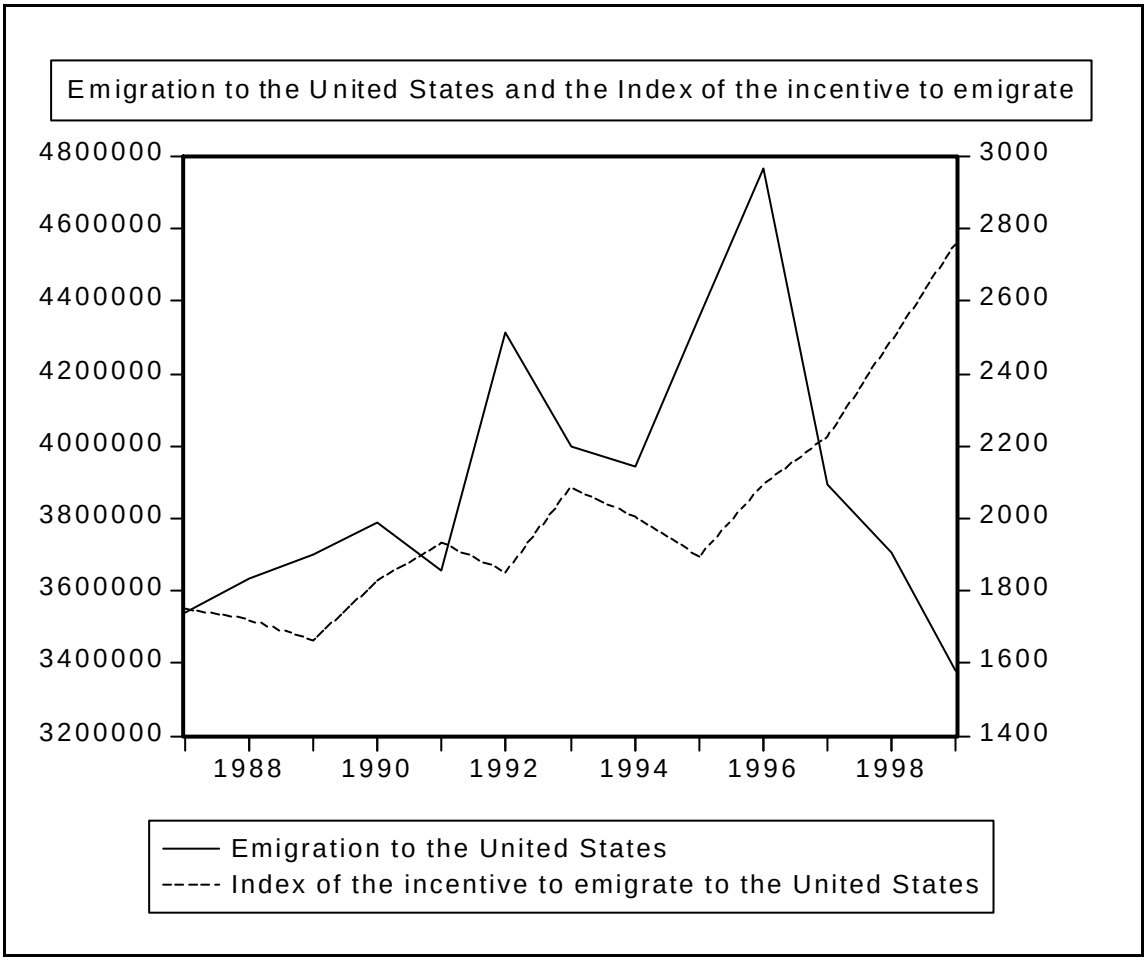


The graph shows a stronger relationship between emigration and the incentive to emigrate during the 1990's than during the 1980's. The sharp increase in emigration to New Zealand that followed the dramatic increase in the incentive to emigrate coincided with the relaxing of emigration controls. So while South Africans seem to have been responding to their incentives, the lowering of emigration controls allowed South Africans to take advantage of these incentives in a way that they could not due during the 1980's. Emigration to New Zealand lagged changes in the incentive to emigrate by one year.

3.14.4 United States of America

The graph below shows emigration to the United States (the solid line) and the incentive to emigrate index (dotted line). The graph depicts the incentive to emigrate index and actual emigration to the United States. The graph shows emigration leading the incentive to emigrate by one year up until 1997.

Figure 16: Emigration to the United States and the emigration index



The link between the incentive to emigrate to the USA and actual emigration to the USA is the weakest of all the countries. While emigration to the USA seems to be leading the incentive to emigrate (this may be due to different reporting periods for the USA INS and the World Bank), emigration to the USA drops dramatically in the late 1990's whereas the incentive to emigrate rises. The generally weak relationship between USA emigration and the incentive to emigrate may well be related to the USA's obscure and inconsistent immigration rules as well as faulting reporting (OECD, 2000). Thus while the USA is the most favored emigration destination (Mattes and Richmond, 2000) it is the second smallest destination country for South African emigrants.

3.14.5 Impact of financial incentives to emigrate

The graphs above show that emigration to the destination countries seems to have strongly followed the index of the incentive to emigrate to these countries. Broadly speaking the trend in three of the destination countries closely follows the index. The following patterns are notable:

- Emigration to the most important destination countries the UK and Australia followed the index closely

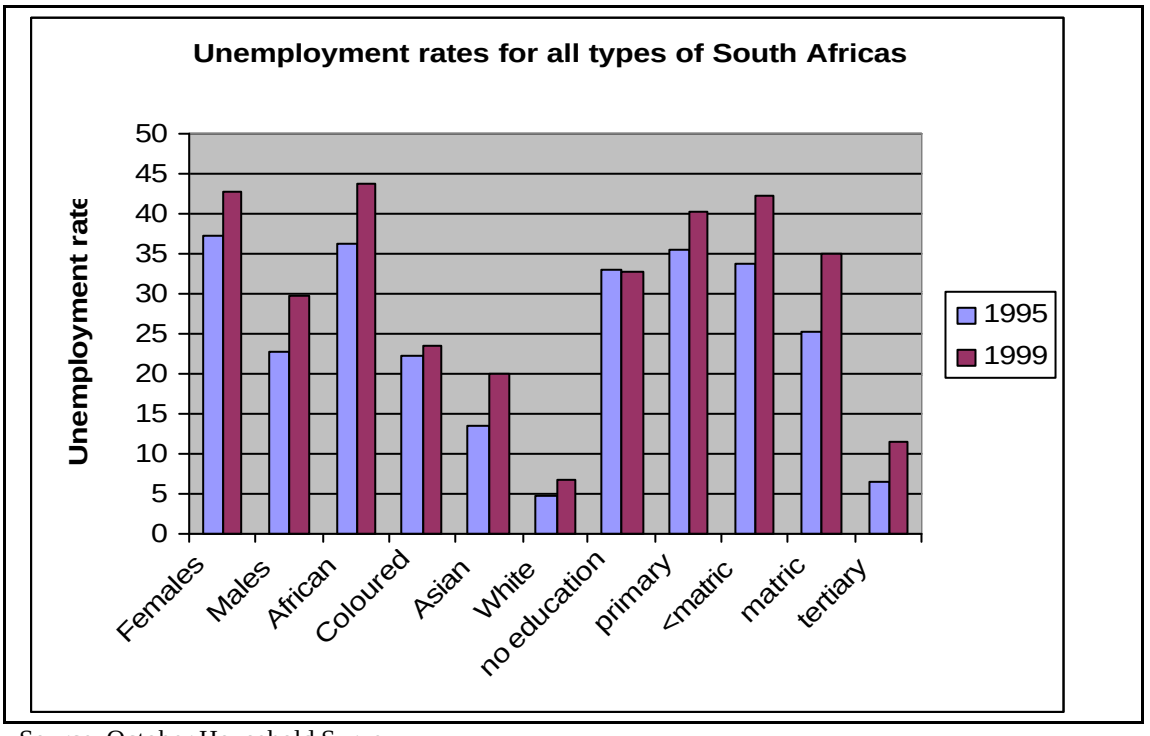
- Emigration to New Zealand followed the incentive to emigrate more closely after the relaxation of immigration restrictions and then lagged the index by one year.
- Emigration to the USA seems to be an anomaly, emigration leads the incentive to emigrate and emigration dropped dramatically to the USA during the late 1990's. This was a period in which emigration to the other destination countries was increasing and the incentive to emigrate was increasing.

The sensitivity analysis, as discussed in the appendix, shows that the main driver of the index was real wages. Unemployment and interest rates had only a minor impact on the index over the period. The next section explores the possibility that unemployment became a factor causing emigration during the late part of the 1990's.

3.15 Employment, unemployment and migration in South Africa

The theoretical section suggested that unemployment could be a major cause of emigration. But Lucas and Fallon demonstrate that during the early 1990's unemployment amongst the skilled in South Africa was low (Lucas, 1998). The conclusion could be drawn that unemployment is therefore not a driver of emigration from South Africa. This is supported by the above analysis that showed that unemployment was of secondary importance to emigration over the period 1980 to 2000. This section presents evidence that skilled unemployment increased during the late 1990's. Fortunately for this period there is detailed information for South African unemployment across different categories of workers. It will then discuss a World Bank study which at first glance implies that the skilled labor market is very tight.

Figure 17: The unemployment rates for all types of South Africans.

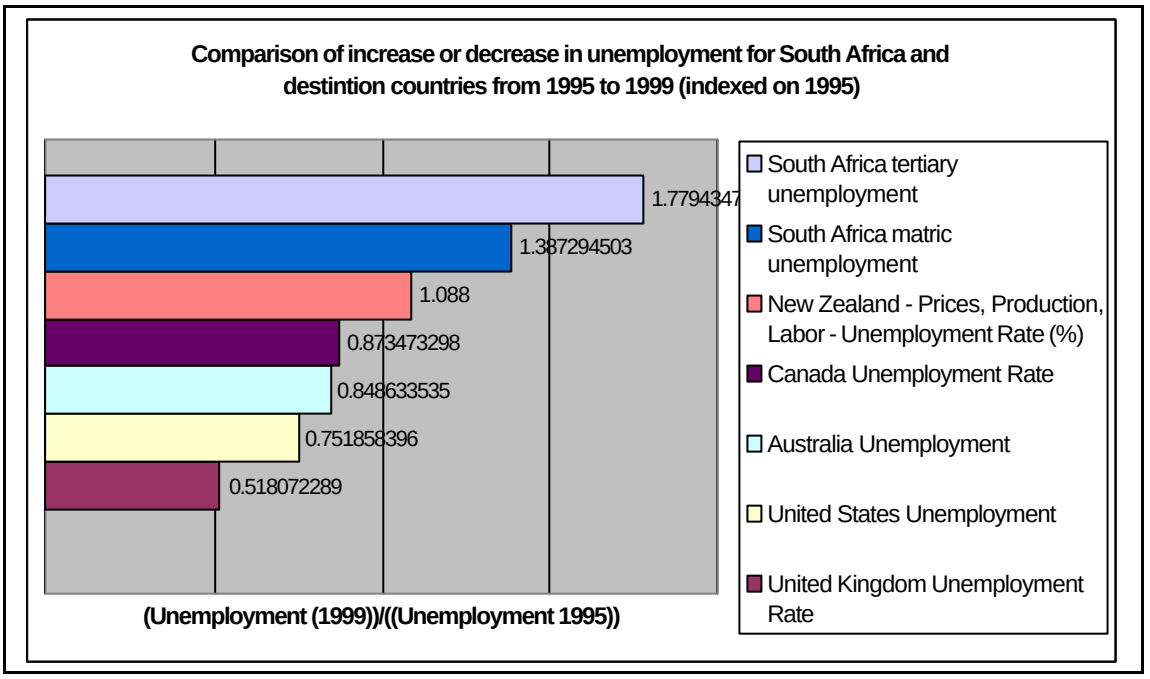


Source, October Household Survey

The graph shows an increase in unemployment for all racial groups, education levels and both sexes

The graph below shows that South African unemployment increased dramatically whereas most of the destination countries experienced dramatic falls in unemployment during the late 1990's.

Figure 18: The proportionate increase in unemployment from 1995 to 1999



Source October Household Survey and the WDI

The above graphs show a dramatic increase in unemployment across all race groups, education levels and sexes. In the destination countries in this period there was a dramatic fall in unemployment.

3.16 Shortage of Skilled workers?

The above results suggest that unemployment rates across all races and education levels have been increasing in South Africa. A World Bank paper "Constraints to Growth and Employment in South Africa" (Vandana et al, 2001) seemingly contradicts these findings. It found an acute shortage of high skilled workers amongst large and small firms. Of large firms 82% had acute problems finding skilled employees such as managers and professionals and similarly amongst small firms 30-45% struggled to find skilled workers. In other words the very skills that Kaplan et al. (1999) found emigrants possessed (Section 1) were the skills that firms are having trouble finding.

Combined with the World Bank study this suggests that unemployment is unlikely to be a reason motivating emigration since the skilled labour market tight in South Africa. The World Bank survey provides the probable answer to this paradox.

75% of firms preferred to hire workers with relevant work experience whereas only 15% of firms preferred to hire workers with tertiary education. Human resource managers rated tertiary educated workers without experience as only weakly employable. On the other hand only 30-40% of large firms and only 10-20% of small firms undertook training. This is despite 82% of large firms reporting a shortage of skills and 30-45% of small firms reporting a shortage of skills.

Therefore the reason for the skills shortage seems to be unwillingness on the side of employers to hire without the relevant work experience or to train them. The result of this is a very rigid labour market where there is little capacity for workers to acquire needed skills required by the market. This leads to unemployment and so emigration.

In the last years of the 1990's South African experienced an increase in emigration across all categories of workers. This may well have played a large role in the massive increase in emigration experienced during the late 1990's.

4. MEASURES TO DECREASE EMIGRATION

Studies have shown that South Africa is experiencing a shortage of 400 000 skilled workers (Business Day, 2002). The emigration of skilled South Africans exacerbates this shortage. In fact the skills shortage is suggestively similar to the number of skilled South Africans who have emigrated, 330 000 (own calculations). This shortage decreases economic growth in South Africa and may well contribute to companies unwillingness to train, since they have too few skilled staff to train inexperienced hires. The policy question then, is how the South African government can decrease the impact of emigration on the South African economy. The two approaches discussed here are ways to decrease emigration and or increase skilled immigration into South Africa.

4.1 Restrict emigration

There are numerous ways that the government could restrict emigration. These include an exit tax, forced periods of community service and others. The problem with these approaches is that they make South Africa a less attractive place to live thus *increasing* the incentive to emigrate. The lowest estimate is that 80 000 skilled South Africans would emigrate if the South African government attempted to impose restrictions on emigration. (Mattes et al, 2000)[3]. It should be kept in mind that numerous South Africans have already applied for the documentation required to emigrate.

4.2 Improve living conditions in South Africa

The most sustainable way to decrease emigration (and increase immigration) is to improve the quality of life in South Africa for skilled workers. This could be done by improving conditions in South Africa, increasing economic growth and skilled labor absorption into the economy. In a globalized world South Africa competes for skilled

[3] The author's Thesis includes more details on this point. The point is an implication of real option theory to emigration. Readers are welcome to request copies from the author.

labor in much the same way that it competes for investment or export markets. The government needs to attempt to make South African conditions attractive for skilled immigrants in much the same way that it makes South African conditions attractive for overseas capital or exporters.

4.3 Attempt to increase skilled immigration

Many of the pernicious effects of skilled emigration can be overcome by increasing *immigration* of skilled workers. This has been South Africa's historical policy. The South African economy has been losing large numbers of skilled emigrants since the 1950's (as shown in section 1). It has made up for this outflow by importing large numbers of skilled immigrants from Europe. But since 1994 the South African government implemented measures hostile to skilled immigration. This has resulted in an unprecedented fall in immigration and aggravated the impact of the high levels of skilled emigration, causing a brain drain. In light of the importance of skilled emigrants the government has recently been making efforts to increase skilled immigration (Business Day, 2002). The government should probably consider implementing the points system which has numerous advantages, including consistency and transparency which are critical to attracting immigrants.

Of the measures suggested that could be used to decrease emigration the easiest to implement is to decrease restrictions on immigration by skilled workers. The government has been making moves to do so.

5. CONCLUSION TO THE PAPER

This paper has shown that lowering institutional restrictions to emigration combined with increasing wage differentials and unemployment have increased emigration from South Africa. It is suggested that the South African government lower restrictions on skilled immigration to overcome the destructive impact of emigration on the South African economy.

APPENDIX

The Human Capital Model

The following model attempts to explicitly model the benefit or cost from emigration to the four most important destination countries, USA, New Zealand, Australia and the United Kingdom. The discussion is derived from the theoretical discussion.

The incentive to emigrate due to wages[4] is shown below:

$$PV_{wages}=\sum(\beta_d((e_d/Pd)\times p_d\times W_d)+ (_1-\beta_d)(e\times p_{sa}\times W_d))/(1+r_d)^t-\sum(\beta_{SA}((e_{SA}/P_{SA})\times W_{SA} (_1-\beta_{SA})(e_{SA}\times W_{SA}))/(1+r_{SA})^t\ldots \quad \ldots\ldots.(\text{Equation 1})$$

Where:

β_d and β_{SA} are the proportion of wages spent on non-tradable goods in the destination country and South Africa

$(1-\beta_d)$ and $(1-\beta_{SA})$ are the proportions spent on tradable goods for the destination country and South Africa

W_d and W_{SA} is the wage expected to be earned in the destination country and South Africa

p_d and p_{sa} are the probability of finding employment in the destination country.

e_d and e_{SA} is the exchange rate in the destination country and South Africa where e = Dollar/Local currency

P_d and P_{SA} are the price levels in South Africa and the destination country

$+r_d$ and $+r_{SA}$ are the interest rates that migrants use to discount future wages

t is the expected number of years that the migrant expects to continue working.

The incentive to emigrate from the effect of emigration on the migrants stock of savings is shown below:

$$S_{incentive}=(S_{SA}\times((e_d/P_d))-(S_{SA}\times((e_{SA}/P_{SA}))\ldots\ldots \quad (\text{Equation 2})$$

Where:

S_{SA} is the stock of savings that the potential migrant has in South Africa

[4] Wages or GDP could have been used. This model attempts to directly model the financial incentive to emigrate. For this wages are more appropriate.

The cost of searching in the destination country is shown below (including cost of searching in the destination country and the cost of not earning an income in South Africa):

$C_{search}=((t_s\times(\delta W_d))\times(e_d/P_d))/(1-r_{sa})^{ts}+(t_s\times(W_{SA}))\times(e_{SA}/P_{SA})/(1-r_{SA})^{ts}$….(Equation 3)

t_s is the expected time it takes to find a job in the destination country

δ is the fraction of the cost of the real wage that searching in the destination country costs

The following equation is the present value of emigrating to the destination country:

$PV_{emigration}=(\sum(\beta_d((e_d/Pd)\times W_d)+ (_1-\beta_d)(e\times W_d))/(1+r_d)^t-\sum(\beta_{SA}((e_{SA}/P_{SA})\times W_{SA} (_1-\beta_{SA})(e_{SA}\times W_{SA}))/(1+r_{SA})^t)-((t_s\times(\delta W_d))\times(e_d/P_d))/(1-r_{sa})^{ts}-(t_s\times(W_{SA}))\times(e_{SA}/P_{SA})/(1-r_{SA})^{ts}-(S_{SA}\times((e_d/P_d))+(S_{SA}\times((e_{SA}/P_{SA}))$……(Equation 4)

(Equation 4) is subject to the following condition:

$(S_{SA}\times((e_{SA}))\geq((t_s\times(\delta W_d))\times(e_d))$ (Condition 1)

The right hand term is the cost of searching for a job in the destination country. This is assumed to be a function of the wage in the destination country. The left hand term is the value of South African savings in the destination countries. The migrant is assumed to be liquidity constrained. Since borrowing in South Africa to finance emigration is subject to substantial transaction costs this is not an unreasonable assumption.

In the model below expected emigration from South Africa is worked out using the equation below:

The present value of emigrating is worked out for all ages from 22 to 65. All positive present values are then added to work out the incentive to emigrate across all age groups.

Expected emigration=Expected emigration$((\sum(\beta_d((e_d/Pd)\times W_d)+ (_1-\beta_d)(e\times W_d))/(1+r_d)^t-\sum(\beta_{SA}((e_{SA}/P_{SA})\times W_{SA} (_1-\beta_{SA})(e_{SA}\times W_{SA}))/(1+r_{SA})^t)-((t_s\times(\delta W_d))\times(e_d/P_d))/(1-r_{sa})^{ts}-(t_s\times(W_{SA}))\times(e_{SA}/P_{SA})/(1-r_{SA})^{ts}-(S_{SA}\times((e_d/P_d))+(S_{SA}\times((e_{SA}/P_{SA}))$……(Equation 5)

Subject to:

$(S_{SA}\times((e_{SA}))\geq((t_s\times(\delta W_d))\times(e_d))$ (Condition 1)

<u>Wages</u>

The migrant is assumed to expect to earn the average wage in the manufacturing wage in the destination country and South Africa. The figures used in the model are:

- Manufacturing wages in the destination country (Annual). (Source, UNDP)
- Manufacturing wages in SA, (Source, UNDP)

Discounting of future earnings stream

The migrant is assumed to discount future earnings streams by the real interest rate earned on government debt. The interest earned on government debt is taken since it is a measure (however incomplete) of financial markets future expectation of government stability. And so provides a measure of the importance. The interest rate on government debt is taken from the IMF.

Savings rate in South Africa

The migrant is assumed to save a constant proportion of wages. These savings are assumed to appreciate at the same rate as the real wage increases. Therefore this is a reasonable approximation for savings that are invested in non-tradable, durable goods that have high resale value. The typical example would be housing. People are assumed to save 20% of income.

Proportion of income spent on imports

The proportion of income spent on tradable and non-tradable goods is assumed to be a constant proportion of income and the same in both countries. Although one would expect some substitution given a change in the exchange rate this substitution effect is not included. The earnings spent on tradable goods are valued using a PPP measure and the earnings spent on tradable goods are valued using US dollars.

Exchange rate valuations

Comparisons between the value of wages in South Africa and the destination country are worked out using international exchange rates and the World Bank Purchasing Power Parity measures. The purchasing power parity measures convert the currency into their value in the constant US dollars (1975). World bank Purchasing power measures are used.

Expected chance of employment in South Africa and the destination country as well as the expected period of search

It is assumed that there is a cost to searching for a job in the destination country. This cost is assumed to be a function of the level of wages in the destination country. Since wages are taken to be a good proxy for the cost of non-tradable goods such as housing and transport. The time it takes to find a job in the destination country is taken to be a function of the unemployment rate in the destination country. The higher the unemployment rate the longer it will take to find a job in the destination country.

The explicit cost of emigration is assumed to be search costs in the destination country. These are assumed to be a function of the unemployment rate. In the index below job search is assumed to take the same percentage of a year as the

unemployment rate (i.e. a 5% unemployment rate implies that 5% of a year will be sent searching). The emigrant gives wages that could have been earned in South Africa.

There were problems finding data for New Zealand unemployment before 1985. This means that the financial incentive index can only go back to 1985 for New Zealand. The time series used for South Africa did not have data after 1997. Unemployment for these two years were extrapolated from previous years data.
Due to the short period for which unemployment data was available a MA technique was used. Two types of MA technique were used.

The first was a MA on actual levels. The formula for predicting Unemployment (X) in time (t) with a three year moving average is shown below:

$$X_t = (X_{-3} + X_{-2} + X_{-1}) / 3$$

This shows a moving average over three years. The results for this and a six year moving average are shown.

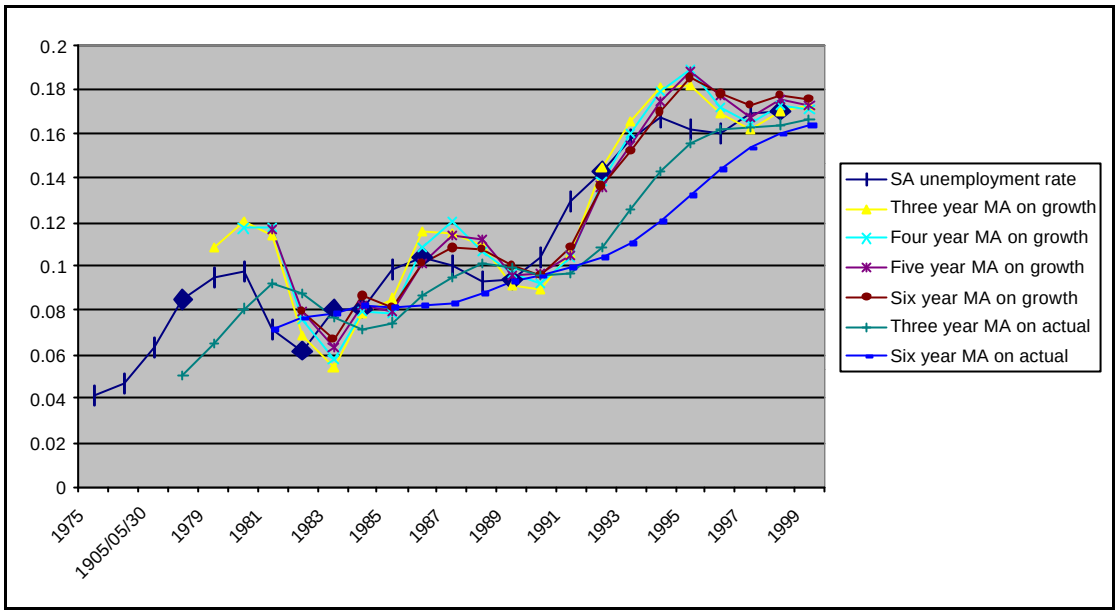
The second MA used was a moving average on percentage changes (called MA on growth). The formula for predicting X with a three MA using this formula is shown below:

$$X_t = ((1 + ((X_{-4} + X_{-3}) / X_{-4}) + ((X_{-3} + X_{-2}) / X_{-3}) + ((X_{-2} + X_{-1}) / X_{-2})) / 3)) \times X_{-1}$$

A three year, a four year, a five year and a six year MA using this formula is presented below.

The graph below shows the performance of all six MA's presented at predicting unemployment one year in advance for the whole time series. These predictions are compared to actual unemployment rates to indicate how effective the different techniques are.

Figure 19: The effectiveness of different forecasting techniques



The graph shows that the best fit with actual unemployment rates is from the three and four year MA on growth. The paper uses a four year MA on growth to make the predictions for the missing data points. The results are roughly in line with unemployment changes from the October Household Survey.

Migrants are assumed to be liquidity constrained so that if at the beginning of the year they do not have enough money to support themselves for the required for job search in the destination country they have to wait another year to save up more money. Many countries make it a requirement to get a visa that the migrant takes enough money to support job search.

Sensitivity analysis

This section does a sensitivity analysis on the index to determine what aspects of the model are driving the model. Only the model for the UK and Australia are tested. The aspects of the index tested are:

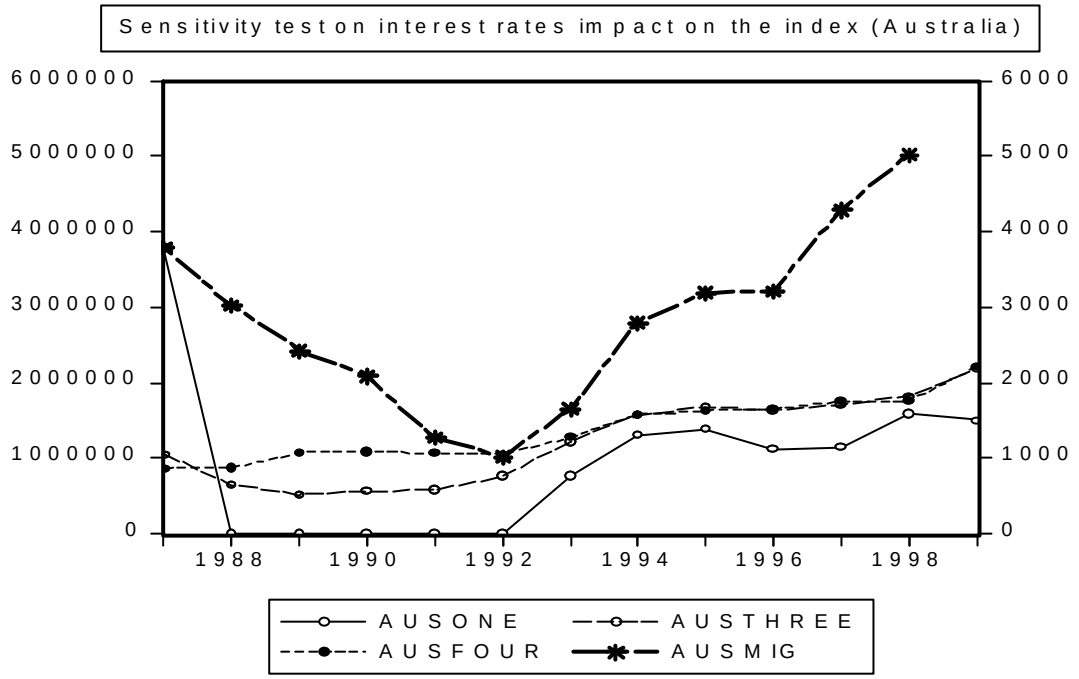
1. the impact of interest rates
2. the impact of savings
3. the impact of the upfront search costs in the destination country
4. wage rates
5. unemployment rates
6. the impact of the proportion of income spent on tradable goods

These aspects are analyzed in turn.

The impact of interest rates

Interest rates are tested from a 100% weighting down to a 0% weighting. A 0% weighting eliminates of interest rates from the model. The graph below shows how this impacts on the index.

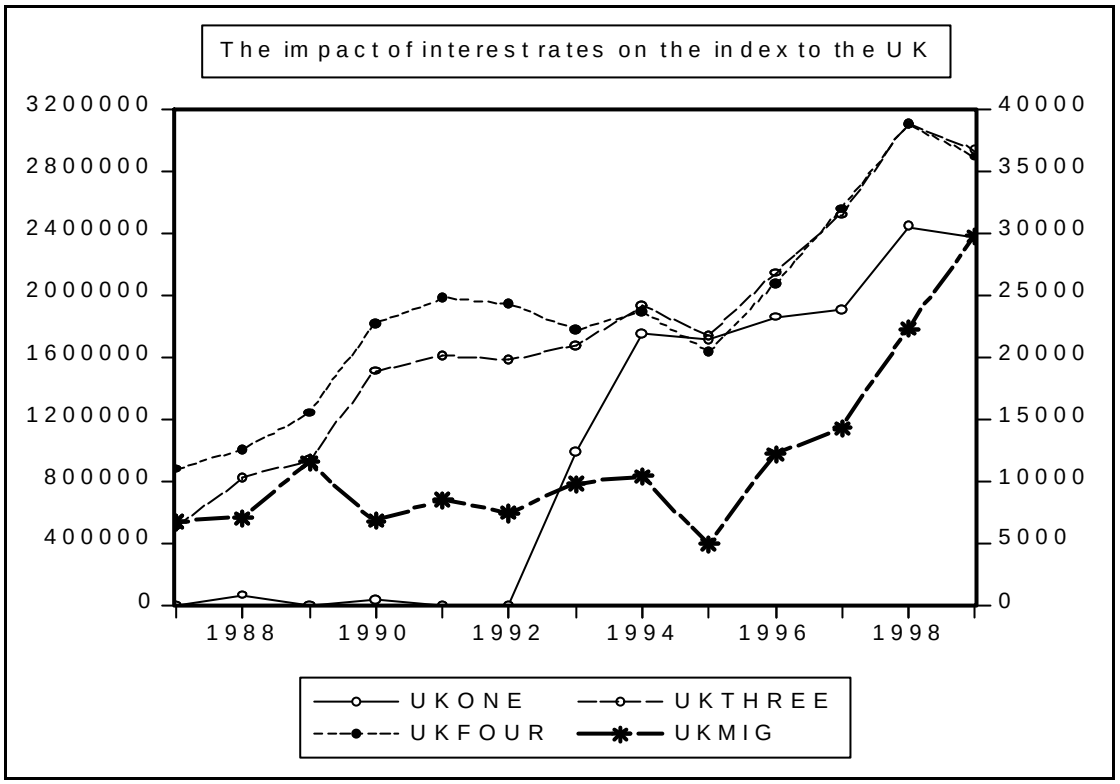
Figure 20: Impact of changing the weight on interest rates in the index



	Key
ausone	All weightings at 100%
austwo	Interest rate weighted at 50% of value
austhree	Interest rate weighted at 10% of value
ausfour	Interest rate weighted at 0% of value
ausmig	Emigration to Australia

The graph shows that an interest weighting of 100% decreases the fit of the model. While a weighting of 0% seems to fit less well than a weighting of 10% they are both a close fit to the emigration series. The graph below shows the same procedure for the UK series.

Figure 21: Impact of the index of changing interest rates for the index to the UK



	KEY
UKONE	All weightings at 100%
UKTWO	Interest rate weighted at 50% of value
UKTHREE	Interest rate weighted at 10% of value
UKFOUR	Interest rate weighted at 0% of value
UKMIG	Emigration to the UK

The results for the UK series are very similar to those for the Australian series. A weighting of 100% eliminates of the fit with the index with emigration. A weighting of 10% improves the fit only slightly over a weighting of 0%.

Impact of interest rates on the index

Interest rates are not driving the model. If one weights the interest rate at 0% and so eliminates interest rates from the model the index still has a reasonable fit with the migration series. Although a low weighting which is greater than zero does increase the indexes fit with the migration series a 100% weighting eliminates this fit.
This does not imply that migrants do not use discount factor but rather that they are as responsive to the yield on government debt as the model would imply.

The impact of savings on the index

Savings have a slight impact on the index. At low weightings on savings the model calculates that people cannot afford to emigrate (and so they have to spend more years saving). This effect is small. Higher levels of savings merely decrease the incentive to emigrate. This effect is due to the impact of the weakness of the South African Rand.

Therefore an increase in the weightings on savings has almost no impact on the trend in the index.

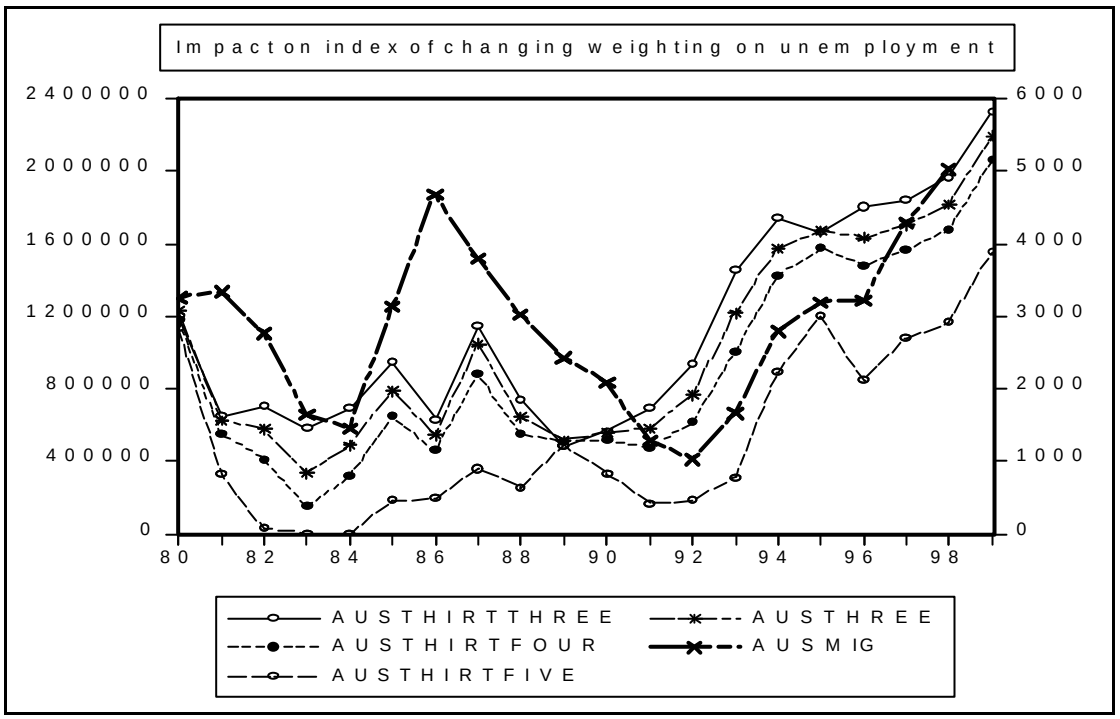
The impact of the upfront search costs in the destination country

The period of search has little impact on the trend of the index. Changing the weighting on the search costs merely changes the level of the index without changing its trend. *Therefore the period of search has almost on impact of the trend.*

The impact of unemployment on the index

The graphs below show the impact of changing the weighting on unemployment on the fit of the model. The first graph shows the impact on the index for Australia.

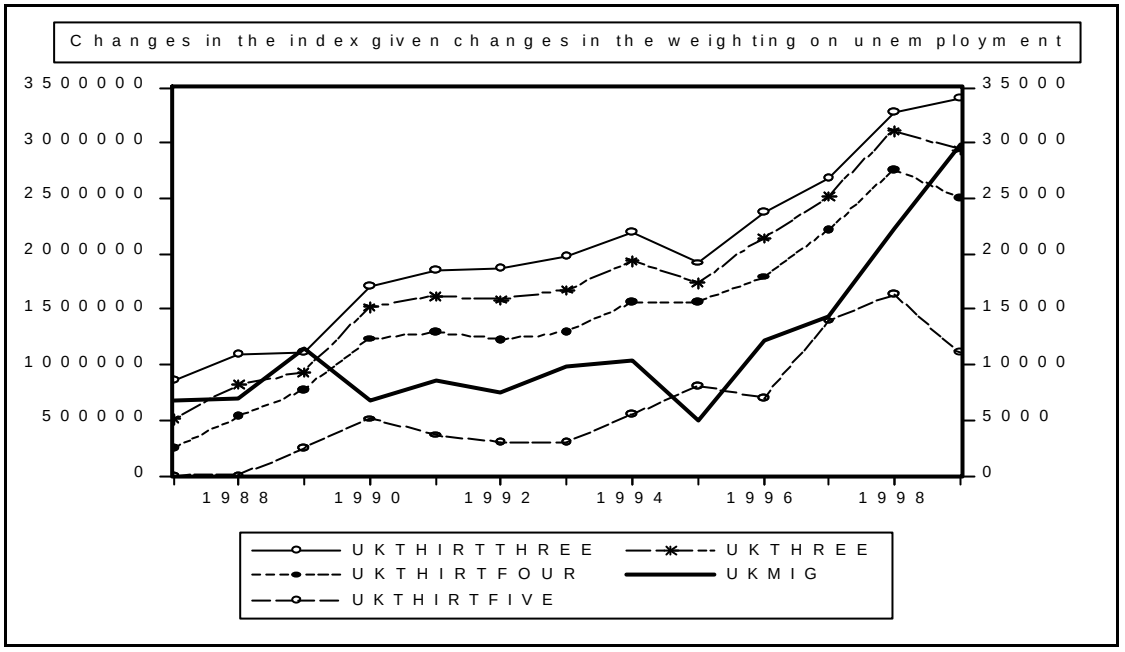
Figure 22: Impact of changes in the weightings on unemployment one the index



	KEY
AUSTHIRTTHREE	Unemployment weighted at 0%
AUSTHREE	Unemployment weighted at 100%
AUSTHIRTFOUR	Unemployment weighted at 200%
AUSTHIRTFIVE	Everything at, r at 0.1 and unemployment at 600%
AUSMIG	Emigration from South Africa to Australia
	All weightings at 100% bar interest rates at 10%

The graph shows that increasing the weighting on unemployment decreases the fit of the index with emigration. Therefore increasing the impact of unemployment 6 times causes the index fit to dramatically deteriorate. On the other hand eliminating unemployment from the index decreases the fit with emigration slightly mainly during the early 1980's and mid 1990's. The graph below shows the impact of changing the weighting on unemployment on the index to the UK:

Figure 23: Impact on the UK index of changing the weighting on unemployment



	KEY
UKTHIRTTHREE	Unemployment weighted at 0%
UKTHREE	Unemployment weighted at 100%
UKTHIRTFOUR	Unemployment weighted at 200%
UKTHIRTFIVE	Unemployment weighted at 600%
AUSMIG	Emigration from South Africa to Australia
	All weightings at 100% bar interest rates at 10%

The graph shows a trend to the Australian index. If unemployment is highly weighted the index loses its fit with the emigration series. If the unemployment is eliminated from the series there is a still a strong fit but the index fit is less close than it was previously.

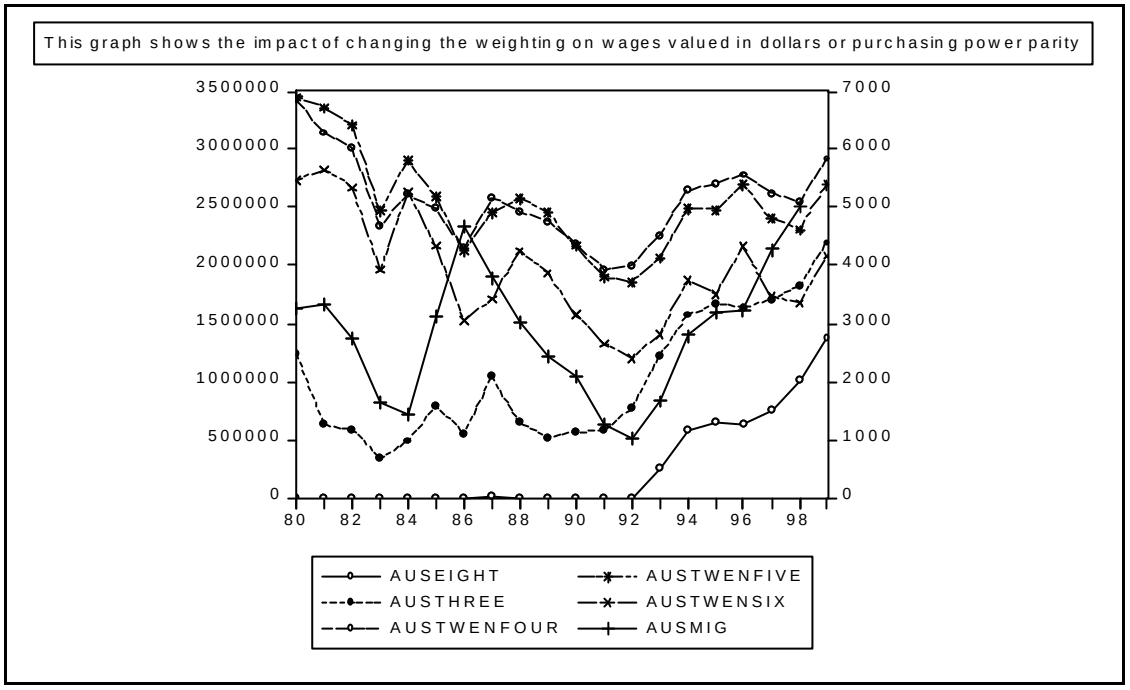
The impact of unemployment on the index to emigrate

The analysis suggests that the main driver of the model is wages not unemployment. Including unemployment in the model does improve the index fit with emigration. This is in line with (Fallon, 1998) who argues that skilled unemployment was minimal in the early 1990's. While there is no reason to believe that skilled unemployment was a serious issue before then, there is evidence that skilled unemployment has increased over the late 1990's. This issue is discussed in greater detail in the next chapter.

The impact of the weightings on wages converted into dollars versus the weighting on the wage converted into purchasing power dollars

In the above analysis assumes that 30% of income is valued in dollars and 70% valued in purchasing power parity terms. This section measures the impact of this assumption on the fit of the index with emigration rates. The graph below shows the impact of changing these weightings on the index to Australia.

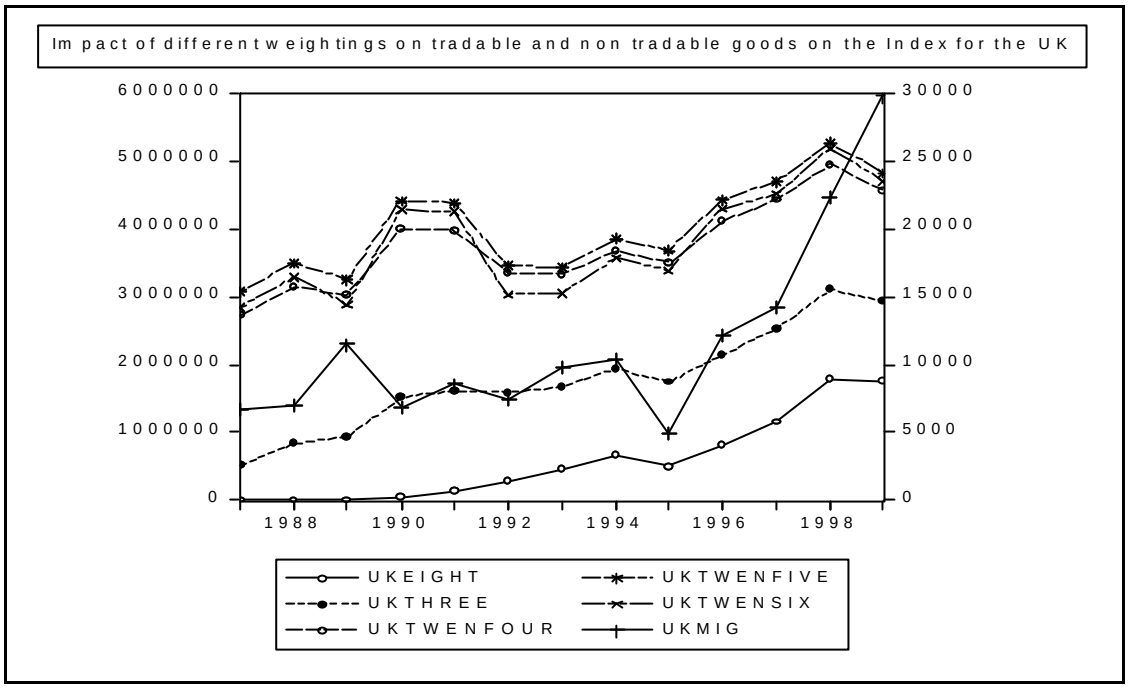
Figure 24: Impact of changing the weighting on dollar versus purchasing power parity measures on the index for Australia



	KEY
AUSTHREE	30% weighting on dollar income, 70% weighting on purchasing power parity
AUSEIGHT	0% weighting on dollar income, 100% weighting on purchasing power parity
AUSTWENFOUR	60% weighting on dollar income, 40% weighting on purchasing power parity
AUSTWENFIVE	80% weighting on dollar income, 20% weighting on purchasing power parity
AUSTWENSIX	100% weighting on dollar income, 0% weighting on purchasing power parity
AUSMIG	Emigration to Australia

The graph shows that increasing the weighting on dollar wages decreases the fit of the index. On the other hand taking dollar wages out of the index takes the index to zero for the whole period under before 1992, a period in which there was substantial emigration. Therefore the combination of purchasing power measure and the dollar denominated measure create the best fit. The graph below repeats the procedure for the UK.

Figure 25: Impact on the index to the UK of changing the weighting on wages denominated in dollars versus purchasing power parity



	KEY
UKTHREE	30% weighting on dollar income, 70% weighting on purchasing power parity
UKEIGHT	0% weighting on dollar income, 100% weighting on purchasing power parity
UKTWENFOUR	60% weighting on dollar income, 40% weighting on purchasing power parity
UKTWENFIVE	80% weighting on dollar income, 20% weighting on purchasing power parity
UKTWENSIX	100% weighting on dollar income, 0% weighting on purchasing power parity
UKMIG	Emigration to Australia

The graph shows that again similarly to Australia dollar denominated wages do not provide a good fit with the series on emigration. Again completely weighting wages takes away the incentive to emigrate before the mid 1990's. Again with the UK weighting both dollar and purchasing power parity result in the best fit with emigration to the UK.

The impact on dollar earnings versus purchasing power parity earnings

The graphs above suggest that wage differentials in purchasing power parity terms drive the fit between the index and actual emigration. Without some weighting on dollar denominated earnings the index would be in the red for the whole of the 1980's and early 1990's. Therefore some combination of the two effects seems to be driving emigration.

Results of the sensitivity study

The sensitivity analysis has suggested the following:

- Wages, especially when valued in purchasing power terms is the driver of the index's fit with emigration
- Unemployment and interest rates improve the fit of the index but are dispensable
- Savings and the period of search have no impact on the fit of the model

Therefore the sensitivity analysis suggest that the higher purchasing power of wage rates in the destination countries is the primary cause of trends in emigration from South Africa.

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