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Trade and Uneven Development: Oppo rtunities and Challenges

The concentration tendencies of SADC's manufacturing industries with regard to South Africa: 1970 - 1999

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TIPS FORUM 2005: TRADE AND UNEVEN DEVELOPMENT: OPPPORTUNITIES AND CHALLENGES

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Prepared by: Simon Hess

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ABSTRACT

The current implementation of a free trade area in SADC has given rise to concerns that the present location of industry in the region will be adversely affected. Specifically, many of the smaller and less-developed countries fear that this change will result in a loss of their industry towards the more developed members, and particularly towards South Africa. The paper conducts a review of the spatial distribution of industry within SADC from 1970 to 1999. This is achieved through the calculation and examination of industrial locational Gini coefficients, measuring the relative degree of concentration of 28 ISIC (rev 2) industries for the years 1970, 1980, 1985, 1990, 1995 and 1999. The analysis, however, is focused on the most recent two decades.

The average level of concentration within SADC is found to increase steadily from 1970 to 1990. Between 1990 and 1995, the level of concentration increases further, but at a lower rate, and, by 1999 industry begins to disperse. The Gini coefficient is a relative measure, and thus does not measure the absolute level of concentration. Thus, much of the increase in concentration seen is towards peripheral countries. To further interpret the Gini, the changes in concentration are compared to the absolute changes in manufacturing employment in South Africa. From this analysis there appears to be a distinct advantage for industry as a whole to locate in South Africa versus SADC as a whole. However, this is not the case for all industries as eight of the 28 industries analysed show particular tendencies to concentrate in the periphery (i.e. SADC excluding South Africa). Additionally, there are individual countries in addition to South Africa that appear to have a revealed comparative advantage in many of the other industries.

Two main policy recommendations result from the paper. Firstly, individual countries in SADC need to promote those industries that show concentration tendencies in their country, and investigate further reasons as to why other industries tend to locate in South Africa. Secondly, further study should be undertaken on the effect of reducing transport costs on specific industries.

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1.1 Introduction

As the issue of reducing trade costs within the SADC region becomes more important, so too does the impact of these reductions on the location of industry. There is a critical need for a greater understanding of the forces that affect the location of different industries. However, empirical studies within the developing country context are exceedingly scarce, particularly within Africa. This paper will begin by outlining the method of analysis used for the present study's empirical investigation into the movement of industry within SADC over a period of three decades, but with the primary emphasis on the years 1980 to 1999. It will then proceed to analyse the movement of industry as a whole in SADC, explore the changing concentration of individual industries and relate this to the share of the industry in the regional powerhouse, South Africa.

1.2 SADC

The SADC region represented a cumulative GDP of US$ 235 billion in 2003, however, the majority of this value (around 70 percent) is contributed by South Africa. GDP per capita varies widely within the group with the highest income at similar levels amongst Botswana, Mauritius, and South Africa, and Namibia to a lesser extent. The remaining countries have extremely low levels of GDP per capita. The DRC and Malawi have the lowest income levels per capita.

Table 1: SADC General Indicators (2003)

Country	Value added, manufacturing (Cur. US$ millions)	GDP at market prices (Cur. US$ millions)	GDP per capita (Cur. US$)	CPI (% change), (%)	Local currency / US$, market rate, period avg	Manufacturing as share of GDP (%)	Industry as share of GDP (%)
Angola	527	13825	1022	98	75	4	60
Botswana	322	7530	4372	9	5	4	45
Congo, Dem. Rep.	302	5671	107	-	405	5	12
Lesotho	189	1077	600	7	8	18	37
Madagascar	688	5474	324	-1	6192	13	14
Malawi	168	1701	155	10	97	10	14
Mauritius	1,010	5224	4274	4	28	19	27

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Country	Value added, manufacturing (Cur. US$ millions)	GDP at market prices (Cur. US$ millions)	GDP per capita (Cur. US$)	CPI (% change), (%)	Local currency / US$, market rate, period avg	Manufacturing as share of GDP (%)	Industry as share of GDP (%)
Mozambique	601	4321	230	13	23782	14	30
Namibia	468	4271	2120	7	8	11	23
South Africa	29,321	165429	3610	6	8	18	29
Swaziland	432	1904	1722	7	8	23	27
Tanzania	685	10297	287	4	1038	7	15
Zambia	473	4335	417	-	4733	11	25
Zimbabwe	1,129	8401	641	-	697	13	21
Total	**36,314**	**239,459**					
Average	**2594**	**17104**	**1,420**	**165**	**37084**	**12**	**27**

Source: World Bank Africa Development Indicators

South Africa's dominance in manufacturing value added (MVA) is even more apparent, contributing almost 89 percent of the total SADC MVA in 1980. However, this share has fallen significantly to 81 percent as of 2003. Likewise, South Africa's share of manufacturing employment fell from 73 percent in 1980 to 70 percent in 1999. The other countries with notable manufacturing contributions are Mauritius, Tanzania and Zimbabwe, with Zimbabwe being the next largest manufacturing country after South Africa with 8.3 percent of total manufacturing employment. However, more recent data is likely to indicate Mauritius possessing the second largest manufacturing sector in SADC.

For SADC as a whole, MVA has grown by an annual average of 4.5 percent between 1982 and 2002. However, this growth has been highly erratic for most countries. The most notable growth rate in MVA was seen in Mozambique which averaged 18.8 percent in the decade ending 2002; much of this has been due to rapid growth in the last few years, particularly in 2001, when MVA grew by 27.2 percent. Lesotho and Mauritius stand out with growth rates nearing 10 percent per annum. On the other hand, Angola, the DRC, Malawi and Zimbabwe have witnessed negative growth rates during one of the two decades.

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There has been a negative trend in terms of the share of manufacturing to GDP, with the regional average falling from 15.3 percent in 1990 to 12.0 percent in 2002. This has been spurred by significant declines in the manufacturing sector in Zimbabwe, Zambia and Malawi, and marginal declines in South Africa. The exceptions to this trend are Lesotho, Mauritius, Mozambique and the Seychelles, who have managed to maintain or increase their share of MVA to GDP.

In employment terms[1], there was an overall increase in manufacturing employment from 1980 to 1999 in all countries with the exception of Mozambique and Zambia, with particularly large increases in Botswana, Lesotho, Mauritius and Swaziland. Lesotho's contribution increased by five fold over the entire period, again with the majority of the increase occurring in the 1980s and a 375 percent increase in actual employment over the two decades.

Botswana, Mauritius, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe all experienced employment growth in the 1980s, while manufacturing employment fell in the 1990s. Employment in Mauritius more than doubled in the 1980s, with only a slight fall in the 1990s. The increase in Mauritius's share of overall manufacturing employment from 2.3 percent in 1980 to almost 5 percent in 1999 shows the increased importance of the country in the region. Likewise, Botswana's share of manufacturing employment increased substantially by 268 percent in the 1980s, and remained somewhat constant during the 1990s. Mozambique, Zambia and Zimbabwe all experienced large reductions in employment in the 1990s after slight increases in the 1980s.

Malawi was the only country that showed a fall in actual employment together with their overall contribution in the 1980s, although by the end of the period, the level of contribution increased back to 1980 levels at 2 percent of the SADC total. Unfortunately,

[1] Shares of employment rather than MVA are used as the empirical analysis in chapter 5 is based on manufacturing employment figures. See Appendix 6.

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data for Namibia could not be sourced for the 1980s due to its economic and political union with South Africa at that time. However, from 1994 to 1999, employment grew by 9 percent and the country's share of total SADC manufacturing employment by 0.1 percent to 1.1 percent.

A very interesting fact is that the countries that stand out in particular are the small SACU countries, namely Botswana, Lesotho and Swaziland, which, more than other countries with the exception of Mauritius, all substantially increased their share of overall manufacturing employment over the last 20 years.

Table 2: Share of manufacturing sector to GDP (%)

	1990	2000	2002	2003
Angola	5	2.9	4.3	3.8
Botswana	4.9	5	4.4	4.3
DRC	14.6	2.4	2.6	5.3
Lesotho	13.9	15.2	16.5	17.6
Madagascar				12.6
Malawi	13.6	1.61	0.9	9.8
Mauritius	23.57	23.63	22.5	19.3
Mozambique	10.7*	12	14.2**	13.9
Namibia	13.8	10.2	9.6**	10.9
South Africa	23.63	18.58	18.83	17.7
Swaziland	29.1	24.9	25.1**	22.7
Tanzania	9.27	7.5	7.44**	6.6
Zambia	31.6	10	10**	10.9
Zimbabwe	20.5	17.4	17.7**	13.4
Average	15.3	11.8	12.0	12.1
* 1991 figure				
** 2001 figure				
***2000 figure				

Source: World Bank (2005)

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Table 3: Manufacturing value added: Actual levels and real growth

	1980	1990	2001	1982-1992	1992-2002	2001	2002
Angola	535	290	305	**-11.3**	**3.7**	**10**	**-**
Botswana	68	201	313	**12.4**	**4.3**	**-0.1**	**2**
Congo, Dem. Rep.	-	-	-	**-3.7**	**-**	**-**	**-**
Lesotho	17	35	69	**8.4**	**5.3**	**7.5**	**8.9**
Malawi	129	194	202	**4.4**	**-1.4**	**-14.2**	**-11.4**
Mauritius	245	596	1,064	**10.5**	**5.3**	**6.7**	**2.3**
Mozambique	213	213	696	**-**	**18.8**	**27.2**	**6.2**
Namibia	232	335	440	**0.5**	**3.3**	**5.9**	**6.3**
South Africa	25,614	29,060	31,552	**0.7**	**2.2**	**3.6**	**4**
Swaziland	86	349	456	**19.7**	**2.6**	**0.9**	**1.6**
Tanzania	-	350	473	**-**	**4.3**	**5**	**7.8**
Zambia	240	367	431	**5.7**	**1.8**	**4.2**	**5.8**
Zimbabwe	1,010	1,405	1,042	**3.2**	**-2.5**	**-19**	**-12**
Total / Average	28,635	33,681	37,463	**4.3**	**3.8**	**4.8**	**3.5**

World Bank (2003)

Almost all countries in the region are heavily reliant on external trade, particularly of primary products to the developed world, especially the EU, with trade values often exceeding GDP. With the exception of SACU, internal SADC trade generally represents a small proportion of the total trade of countries involved. However, there are a number of bilateral agreements within the region which are discussed below.

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2 Method and problems of analysis

2.1 Countries chosen for analysis

The aim of the study is to investigate how the distribution of industry has changed in the SADC group with falling transport costs over time, and to highlight specific trends of industry, both individually and as a whole, as transport costs fall even further[2]. Therefore, 11 of the member states that have currently ratified the SADC protocol on trade, for which data is available, will be analysed. These will be assumed to be a proxy for the entire SADC. These countries are Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. Although Angola has signed the Protocol, they are yet to present their offer. The DRC have expressed interest in the FTA, but are yet to sign, and Madagascar have only very recently been admitted into membership. Additionally, data availability for these countries is very poor.

2.2 Time period

The time period chosen to analyze the distribution of industry in the SADC region ranges from 1970 to the year for which the most recent reliable data was available, 1999. However, the focus of the paper will be between 1980 and 1999 – the period during which there has been a formal cooperation agreement in the region, from the initial SADCC cooperation agreement to the planning of the FTA currently being implemented. Locational Gini coefficients are calculated at 5 year intervals from 1980 to 1995, and then for 1999[3].

[2] This does not presume that falling transport costs is the only factor that has affected the location of industry over this period. However, it is assumed that transport costs have fallen to some extent through cooperation, trade agreements and a general movement towards economic liberalisation within the region. Trends that are observed within individual industries are likely to be amplified as transport costs fall further and the choice of industrial location becomes more important.

[3] As the latest year available for data

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2.3 The locational Gini coefficient

A number of indices have been developed to measure geographic concentration. There are four indices that are used predominantly in the literature, the concentration index, the Herfindahl index, the Ellison-Glaeser concentration index, and the locational Gini coefficient. However, which index to use is a hotly debated issue in the literature (Spieza, 2002:1).

For this study, the locational Gini coefficient is used as it is the "most widely used concentration index in the analysis of regional patterns" (Stirboeck, 2002:5). The standard form of calculation was popularised by Hoover (1936) and is used as the basis for Krugman's (1991) coefficient. This index measures the extent to which individual industries are concentrated within a regional bloc. In order to calculate the Gini, it is first necessary to work out and order the location quotient. The explanation below will take regions to be subsections of a country. The location quotient shows the ratio of a region's share of a particular industry to that of its share of aggregate employment, and can be calculated as follows.

For each industry i, the ratio of the industry's share of total national manufacturing employment (Ej/Ec) and the share of national employment in industry for each locational unit (Eij/Eic) is calculated, where:

E_{ij} = employment in industry 'i' for region 'j'
E_j = total employment in region 'j'
E_{ic} = employment in industry 'i' for country 'c'
E_c = total employment in country 'c'

This will calculate the 'locational quotient' (L_{ij}) defined as follows

$$L_{ij} = \frac{E_{ij} / E_{ic}}{E_c / E_j}$$

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If the quotient is greater than one, then region 'j' has a higher percentage of industry 'i' compared to its proportion of total industry employment relative to other regions. This provides a simple measure for revealed comparative advantage (RCA) (Petersson, 2002).

The regions are then ranked by their locational quotients in descending order, and the cumulative percentage of employment in industry 'i' ($\sum Eij/Eic$), and the cumulative percentage of employment in total manufacturing ($\sum Ej/Ec$) are calculated. The Lorenz curve for industry i is then formed with ($\sum Ej/Ec$) on the X-axis and ($\sum Eij/Eic$) on the Y-axis. If the location quotient is equal to one for all regions, the industry will be evenly spread across all regions and the curve will be a 45-degree line. If the location quotient is greater than one the localisation curve will be concave.

Using the Lorenz curve, it is then possible to calculate the coefficient of localisation (Gini coefficient) by taking the area between the 45-degree line and the localisation curve, and dividing this figure by the entire triangular area beneath the 45-degree line. If the coefficient is equal to zero the industry is completely dispersed across regions, and if equal to one, industry is completely localised (Kim, 1995:883).

To provide a theoretical example of a highly concentrated industry we assume three regions with the following characteristics. Region A represents 40 percent of total manufacturing employment (Ej/Ec), and 10 percent of employment in industry 'i' (Eij/Eic), Region B, 50 percent and 50 percent, and Region C, 10 percent and 40 percent respectively.

Thus, the locational quotient for Region A $L_{ij} = \frac{E_{ij} / E_j}{E_{ic} / E_c}$

$= 0.1/0.4$

$= 0.25$

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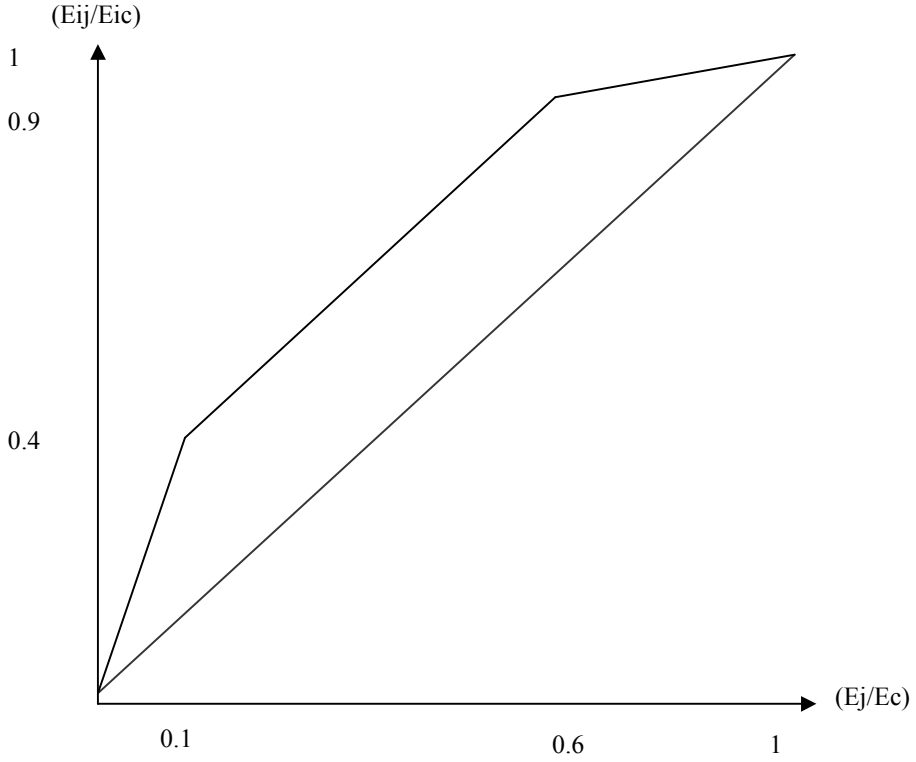
The locational quotients are 1 for Region B and 4 for Region C. The resulting Lorenz curve is depicted in Figure 5.1, with the regions ranked C, B, A.

Table 4: Example of cumulated location quotients

Region	(∑Eij/Eic)	(∑Ej/Ec)
C	0.4	0.1
B	0.9	0.6
A	1	1

Figure 1: Hypothetical Lorenz curve



The locational Gini coefficient is then equal to 0.450, the area between the Lorenz curve and the 45-degree line, divided by the entire triangular area.

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Employment is usually preferred to other measures of manufacturing, such as manufactured value added (MVA) for cross-regional and country analysis. This is because it is more stable and easily measured. An additional problem in Africa is the conversion to a common currency unit as exchange rates are highly volatile and / or artificially fixed.

However, a common criticism of the Gini coefficient is that it does not factor in the size of firms; hence the index may be biased upwards if there are a few large firms in one small area (Macon and Puech, 2002:5). Additionally, it is argued that the Gini gives additional emphasis to the middle parts of the distribution, thus reducing the impact of changes on the edge of the distribution (Stirboeck, 2002:5). Other criticisms have revolved around the potential for the Gini coefficient to 'confuse' the distinct concepts of inequality and concentration (Arbia, 1989, and Wolfson, 1997, in Spiezia, 2002:2). Devereux *et al* (2002:10) find a strong negative correlation between the locational Gini coefficient and the number of firms, a factor exacerbated by the use of the concentration index.

2.4 Problems with the analysis

Unsurprisingly, the major problem faced by the study was obtaining accurate data. The most comprehensive standardised database available is provided by the United Nations Industrial Development Organisation (UNIDO). However, data was missing for a number countries and industries over the years 1980 to 1999. Although some more recent data could have been sought, it would have been for a select few countries only. The last year for which comparable data could be obtained was 1999. Due to these data constraints, it was decided to use 5 year intervals and, where data for a particular year was not available, the closest year for which data could be found was used. The countries that posed the biggest problem in terms of data collection were Namibia, due to its union with South Africa until 1994, and Paraguay, for which only highly suspect data was available for 1991 and 1995. A list of the countries and the years used is presented in the appendix.

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The quality of the data is also of concern, with data missing for some industries for certain years, or extremely large changes which appear suspect, such as the disappearance of Malawi's tobacco industry. Thus, the reliability of the results is heavily affected by the quality of the data. It is indicated in the analysis where there is data missing. In most cases it was unclear whether this was due to data not being recorded, or to no employment in the industry. As an attempt to check for missing data, data for other variables such as MVA, establishments and wages were checked in order to ascertain whether it was just employment data missing. In every case, where no employment data was recorded, there was no data for any of the other variables.

Employment data is most commonly used in the literature, as well as being the most readily available and accurate data. Data for MVA is less readily available, subject to more calculation problems, and have to be converted to a common exchange rate. For many countries in SADC exchange rates tend to be either fixed or highly volatile making a common measure of MVA meaningless. Additionally, MVA data availability and quality was so poor that this was not possible.

Although there are significant advantages in using the Gini coefficient as a measure of industrial concentration, there is a problem in that the distinction between concentration and specialisation is blurred. This is because the measure is relative, and takes into account the overall shares of each country's manufacturing employment sector. This means that the Gini will be higher for a small country with a high degree of concentration of a particular industry, even though a larger country may possess an overwhelming majority of the industry. This is evident in the tobacco industry having the highest Gini at 0.61, even though there are four major producers in the region. As a means of comparison the pottery industry, where South Africa contributed 98.8 percent of total employment, had a Gini of 0.29, and the miscellaneous petroleum industry, where almost all industry was concentrated in South Africa, had a Gini of 0.31. Thus, the way in which these Ginis are interpreted must be handled with care. An additional problem with the

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Gini is the question of whether to include countries with zero production levels in particular industries in the calculation. As this is a common occurrence within SADC countries, it was decided to include all countries for all industries. Perhaps a more pervasive problem with a relative measure in the SADC context is that the absolute size of the South African manufacturing industry is so large in comparison to the rest of SADC. Consequently an increase in the concentration of an industry in South Africa may lead to a fall in the Gini coefficient as the smaller countries now have a smaller share of this industry. Hence as a relative measure the Gini would have to be interpreted in conjunction with an absolute comparison with South Africa.

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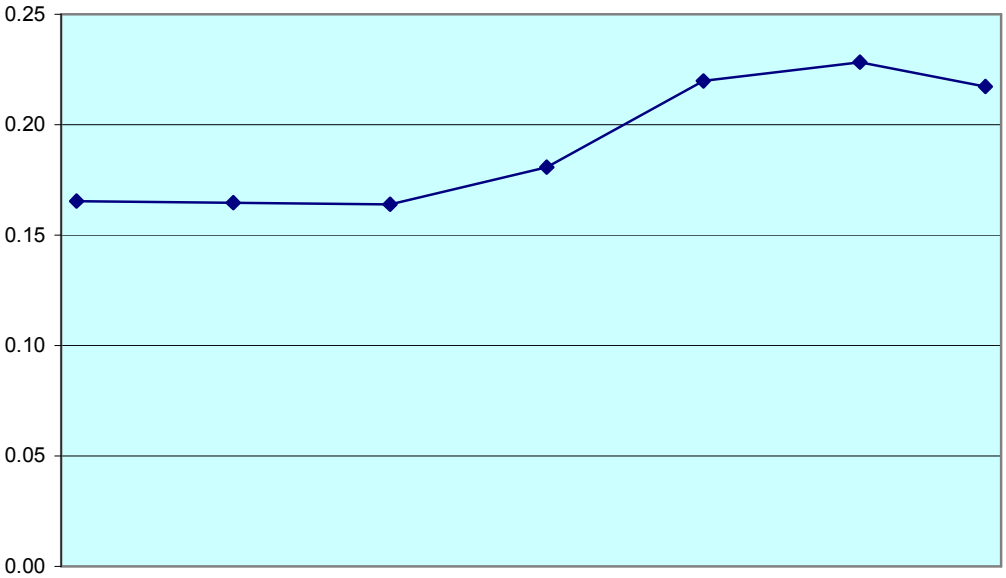
3 SADC time series analysis: 1970 - 1999

3.1 The overall change in SADC industry

The study computed locational Gini coefficients for SADC over the time period 1970 to 1999. This allows for a comparison of the situation before and after liberalization efforts began in the region, and to see how the structure of industry has changed since the inception of SADC.

Figure 2: The average SADC locational Gini coefficient



	1970	1975	1980	1985	1990	1995	1999
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.[4]

Taking the simple average of the Gini coefficient we can map the overall distribution of industry in the region[5]. The period 1970 to 1980 shows the situation prior to the

[4] For the purpose of plotting the Gini graph above, and those that follow, the locational Gini for 1975 is taken to be to be the mean of 1980 and 1970.

[5] The simple average is used to show the average distribution of all industry, regardless of its share of the SADC total. This allows an equal representation of each industry, not biased by weights, and additionally is a useful measure with which to compare the Gini of individual industries.

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formation of the Southern African Development Coordination Conference (SADCC), the precursor of the Southern African Development Community (SADC). During this time the new-found independence of the majority of African countries from the 1960s to 1980, the Unilateral Declaration of Independence in Rhodesia (Zimbabwe) and the apartheid regime in South Africa there was a strong focus on inward-oriented industrialisation. Countries attempted to alter economic ties with former colonial powers and become increasingly self sufficient, particularly via the development of the underdeveloped industrial sector. What we see from 1970 to 1980 is that the distribution of industry in employment terms remains stagnant, with only a slight increase in industrial dispersion. The average Gini coefficient fell by 0.01, from 0.17 in 1970 to 0.16 in 1980.

The formation of the SADCC in 1980, a cooperation agreement more than an attempt at liberalization, aimed to reduce reliance on apartheid South Africa, which was excluded from the group. During this time, the Gini coefficient showed an increase in industrial concentration, perhaps reflecting the large share that new government initiated industry had in each country's overall production, particularly in the smaller countries. From 1980 to 1985 the coefficient increased marginally by 0.02 from 0.16 to 0.18, but then rose rapidly in the latter part of the 1980s, increasing to 0.22 in 1990. Overall, this represented an absolute increase of 0.06 in the coefficient over the decade, a relative increase of 37.5 percent.

The reformation of the SADCC into the SADC showed a marked commitment to economic reform and trade liberalization. The majority of members also underwent IMF backed domestic macroeconomic reform at this time. A highly influential factor was the inclusion of the now democratic and comparatively more industrialised South Africa into the group, as well as the rapidly progressing Mauritius. From 1990 to 1995, the Gini coefficient increased marginally by 0.0085 and appeared to peak at this level. This could potentially have been a turning point for the region as, by 1999, the Gini fell by 0.011 indicating that on average industry was beginning to disperse. The final value of the index at 0.217 reveals that industry in 1999 was more dispersed than in 1990.

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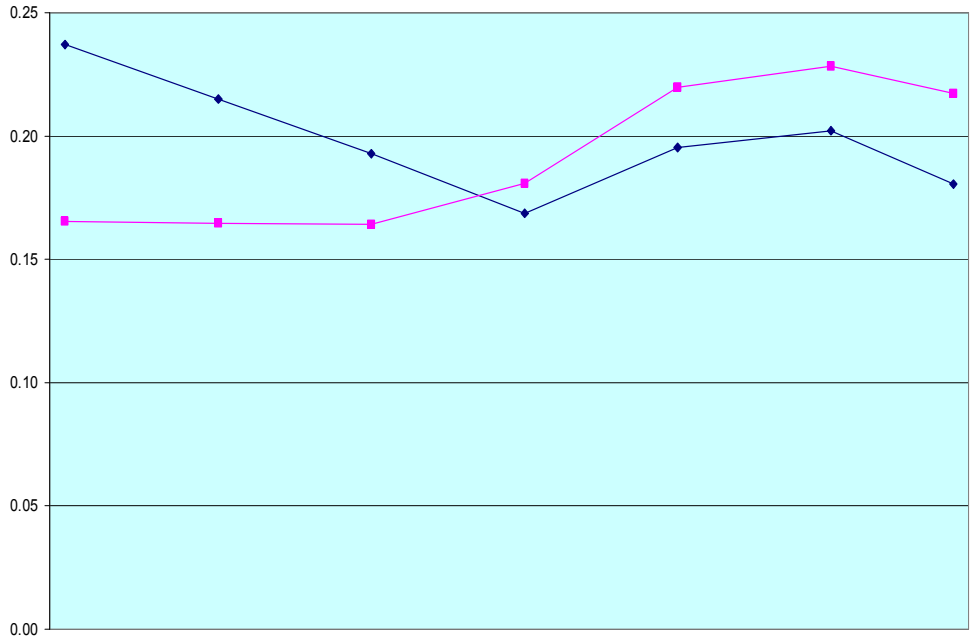
3.2 Individual sector analysis

3.2.1 Food products (311)[6]

The Gini coefficient for food products decreased substantially from 1970 to 1985. However, between 1985 and 1999, the Gini kept trend with the average, increasing at a decreasing rate until 1995, and then falling to levels just above that of 1985.

Figure 3: Food products



	1970	1975	1980	1985	1990	1995	1999
311: Food products	0.2371	0.2150	0.1928	0.1688	0.1953	0.2021	0.1806
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

South Africa contributes just over half of the total SADC employment in food products, significantly less than its average contribution. The Gini appears to have been driven by

[6] 314 – The number in brackets after the category represents the ISIC revision 3 code assigned to that industry.

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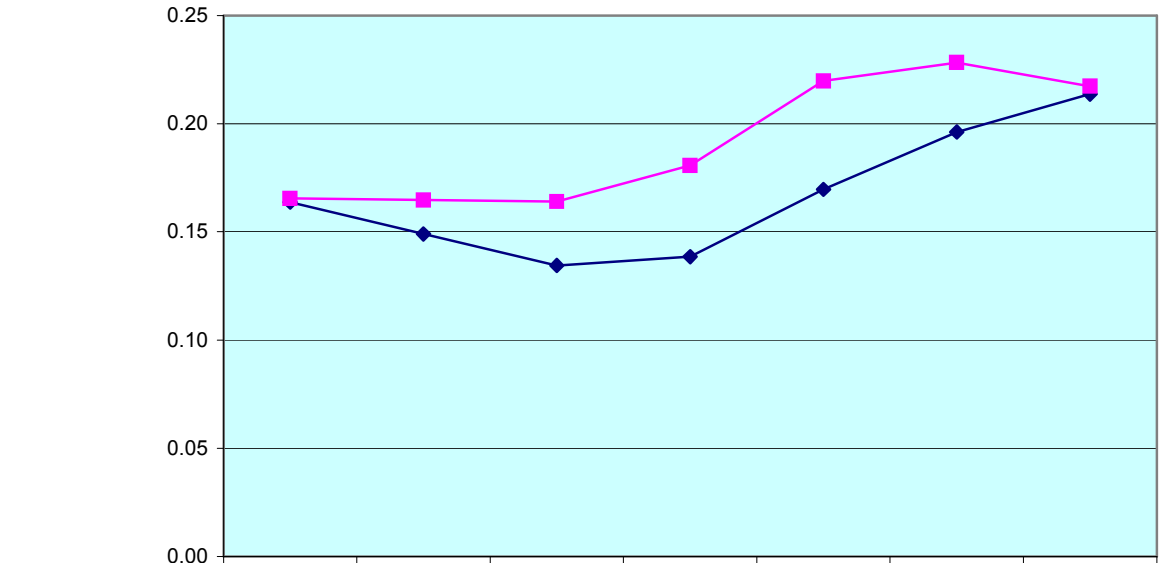
South Africa's falling share of SADC employment in the 1980s, and then increased share in the 1990s. Other countries that are likely to have increased the Gini in the 1990s are Tanzania, Botswana and Lesotho. Tanzania's contribution increased significantly over the two decades from 6.8 percent of the SADC total to 12 percent, and so doing, overtaking Zimbabwe, whose share remained fairly stable at just over 7 percent. This would have been compounded by falls in the shares of Malawi, Mozambique, Namibia, Swaziland and Zambia, which also displayed significant falls in actual employment.

3.2.2 Beverages (313)

After falling between 1970 and 1980, the Gini for beverages has steadily increased with particularly great increases in concentration between 1985 and 1995. Although it still increased in the latter part of the 1990s it did so at a slightly slower rate. From an initial level of 0.1345 in 1980, the Gini has climbed to approximate the average industry Gini 0.2137 in 1999.

Figure 4: Beverages



	1970	1975	1980	1985	1990	1995	1999
313: Beverages	0.1637	0.1491	0.1345	0.1386	0.1696	0.1961	0.2137
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

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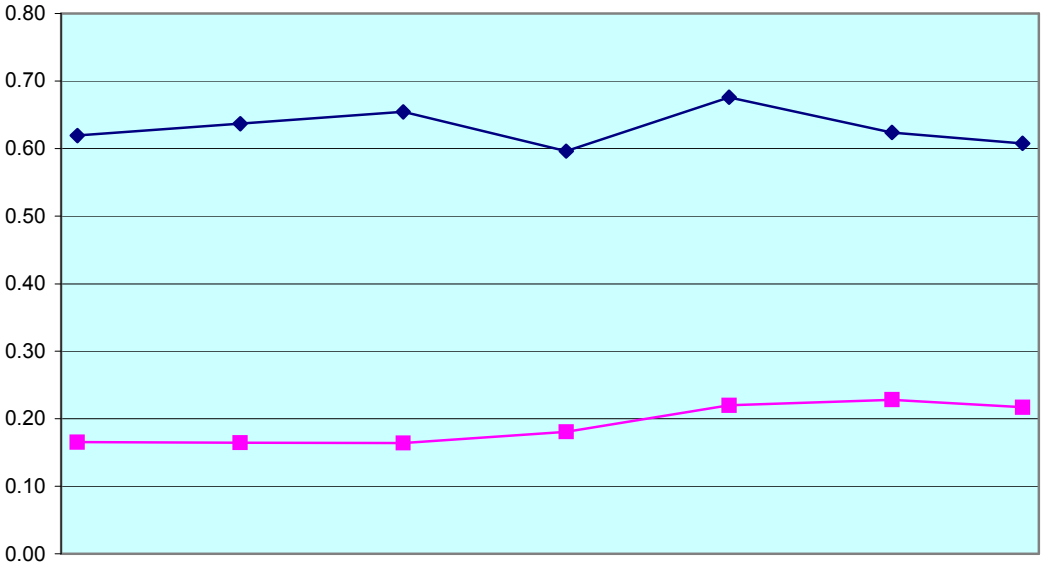
This rise in the Gini has been spurred on by rapid increases both in actual employment in the beverage industry as well as their share of SADC employment in Botswana, Malawi, Tanzania and Zimbabwe. At the same time, South Africa's share of employment fell substantially from 61.3 percent in 1980 to 54.8 percent in 1999, thus amplifying the concentration in the above countries. Thus the increase in the Gini does not represent a pull towards the core, but rather could reflect a relocation of production to a few of the smaller countries.

3.2.3 Tobacco (314)

Tobacco was by far the most concentrated industry in SADC throughout the period of analysis, remaining almost three times higher than the average. Concentration has remained fairly stable, with a slight fall in concentration from 0.6542 in 1980 to 0.6076 in 1999.

Figure 5: Tobacco



	1970	1975	1980	1985	1990	1995	1999
314: Tobacco	0.6194	0.6368	0.6542	0.5962	0.6758	0.6240	0.6076
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

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The extremely high level of concentration is partially a result of the four BLNS countries possessing no tobacco processing employment whatsoever. Three of the remaining SADC countries contribute the majority of the manufacturing employment, that is South Africa with 23 percent, Tanzania with 38 percent and Zimbabwe with 32 percent in 1999. Tanzania in particular showed rapid growth, with their contribution doubling from 16 percent in 1980 to the 38 percent indicated in 1999. On the other hand, data shows that Malawi's share fell from 29 percent in 1980 to less than one percent in 1999 with the apparent closure of 5 of the 6 firms that were operating in 1980. This appears highly suspicious and, upon further direct investigation, there appear to be 4 tobacco firms currently operating in Malawi. However, the ratio of labour to value added varies substantially, which points to a different result in the concentration of manufacturing using MVA. For example, Mauritius, which only contributes 2 percent of SADC employment, contributed 21 percent of the SADC MVA in 1999, compared to Tanzania's 6 percent MVA contribution and 38 percent employment contribution. Part of this discrepancy could be due to the problems highlighted earlier on the use of MVA data, but the differences between the two measures are still overwhelming. The increasing share of this industry contributed by South Africa (despite no real increase over the period) appears to be driving the current trend of dispersion – as the industry becomes less concentrated in the small countries.

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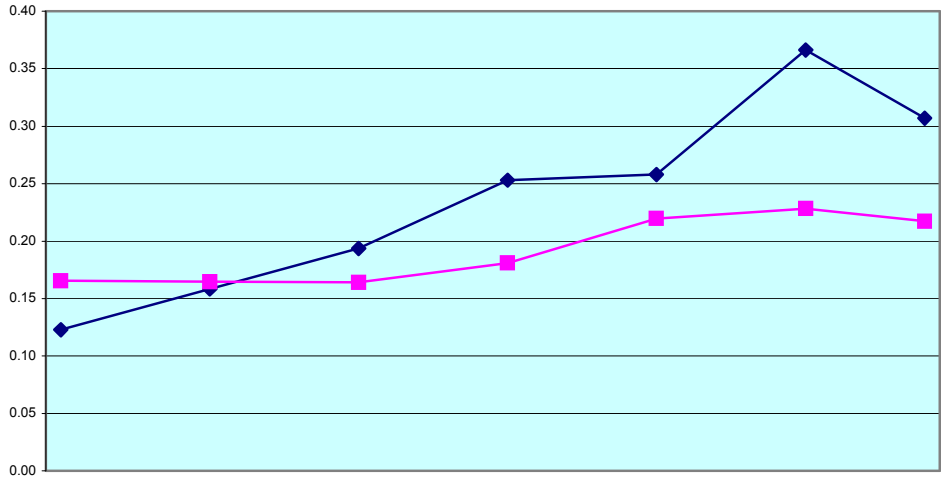
3.2.4 Textiles (321)

The textile industry has shown one of the most notable concentration tendencies, with the Gini increasing from 0.1937 in 1980 to a peak of 0.3664 in 1995. However, since 1995 textiles have dispersed to a level of 0.3071.

Figure 6: Textiles



	1970	1975	1980	1985	1990	1995	1999
321: Textiles	0.1228	0.1583	0.1937	0.2531	0.2580	0.3664	0.3071
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

The increase in concentration of the industry is likely to have been the result of a 41 percent fall in employment in the South African textile sector while there has been strong growth in a number of the smaller countries. This has seen South Africa's share of the SADC total fall from almost 60 percent in 1980 to 46 percent in 1999. Conversely, textile employment levels in Botswana increased by 487 percent, in Lesotho by 191 percent (after extraordinarily strong growth in the 1980s of 830 percent) and in Mauritius by 121 percent. Tanzania and Zimbabwe, the two largest producers after South Africa both increased their share of total SADC employment in textiles, although employment levels remained fairly steady in the face of South Africa's falling employment levels in this sector. The increased concentration relates to an increased share of employment now occurring in the periphery.

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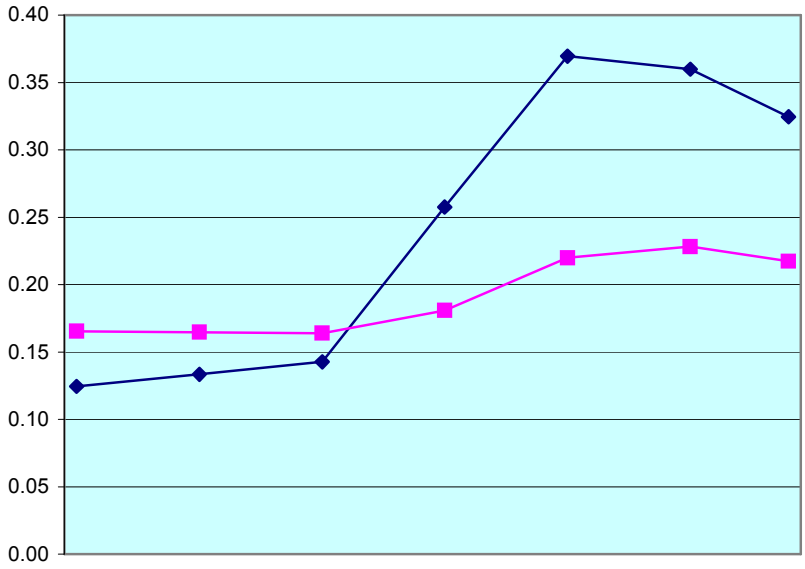
3.2.5 Wearing apparel, except footwear (322)

Figure 7: Wearing apparel, except footwear



	1970	1975	1980	1985	1990	1995	1999
322: Wearing apparel, except footwear	0.1244	0.1336	0.1428	0.2576	0.3696	0.3599	0.3244
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

This industry has mirrored the experience of textiles with the exception that concentration peaked earlier, in 1990 with a Gini of 0.3696. After this point, industry levelled off and then began to disperse significantly in the later half of the 1990s. The Gini coefficient in 1999 was equal to 0.3244, thus indicating that the industry is still agglomerated relative to other industries.

The sharp rise in the Gini during the 1980s can be attributed to strong growth in Mauritian employment where the apparel industry grew by 368 percent, and increased Mauritius's share of SADC employment dramatically from 10 to 27 percent. The fall in

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the Gini at the end of the period could be due to the establishment of the apparel industry in Lesotho and Swaziland in the mid 1990s, as well as declining employment levels and shares in South Africa, Zimbabwe and Mauritius. Nonetheless, Mauritius has established itself as SADC's second largest apparel producer after South Africa. The other notable country, Lesotho, gained 4 percent of SADC's total employment, after apparently zero production levels in the 1980s. It thus appears that the Gini was at first driven by strong growth in employment in the dominant countries in the 1980s. The status quo changed in the 1990s with the decline of the industry in the dominant countries and the establishment of wearing apparel production in two of the smaller countries. Both the textile and wearing apparel industries changed from being two of the least concentrated industries in 1980 to the being the most concentrated in 1999.

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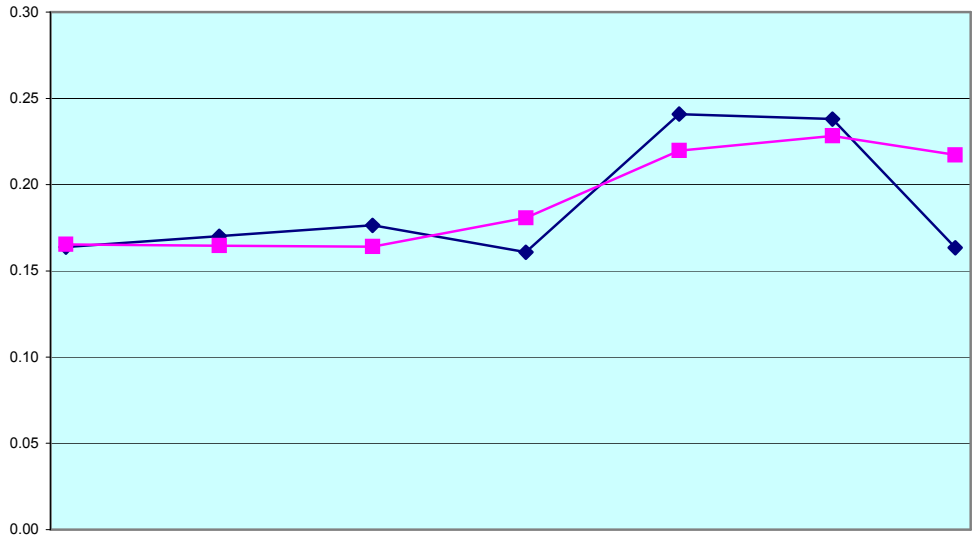
3.2.6 Leather (323)

The leather industry displayed a sharp increase in concentration from 1985 to 1990 at which time it levelled off until it fell drastically in the second half of the 1990s, becoming more dispersed in 1999 than 1980 levels. At the peak of concentration in 1990 the Gini coefficient was 0.2409, which then fell to 0.1633 in 1999.

Figure 8: Leather



	1970	1975	1980	1985	1990	1995	1999
323: Leather products	0.1638	0.1701	0.1764	0.1608	0.2409	0.2380	0.1633
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

The rapid increase in concentration in the late 1980s appears to have been driven by large increases in the employment share of Botswana, Lesotho, Mauritius and Zimbabwe, while South Africa's share fell substantially from 73 percent to 61 percent, thus increasing the importance of the four initial countries. The dispersion in the late 1990s appears to be the result of a slight reversal of this process, with South Africa increasing its share while Lesotho's share fell substantially (from 13 percent to less than one percent). Again, this could be due to bad data for Lesotho for 1999.

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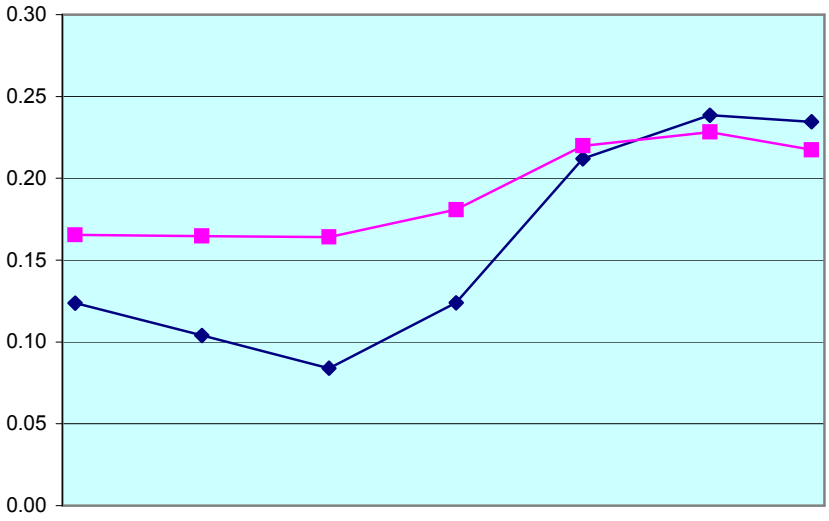
3.2.7 Footwear (324)

After a slight fall between 1970 and 1980 the footwear industry became increasingly concentrated until 1995, when, following the general trend of industry, the Gini began to fall slightly. In 1980, footwear was one of the most dispersed industries in SADC with a Gini of 0.084, however, by 1995 it was no longer so, with a Gini above the average at 0.2386. From 1995 to 1999, there was a slight dispersion of the industry.

Figure 9: Footwear



	1970	1975	1980	1985	1990	1995	1999
324: Footwear, except rubber or plastic	0.1237	0.1039	0.0840	0.1239	0.2118	0.2386	0.2345
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data

South Africa's proportion of SADC employment fluctuated over the period of analysis, contributing 60.2 percent of total SADC employment in 1999, down from a high of 79 percent in 1990. Increased shares of employment in this sector in both South Africa and Zimbabwe during the 1980s appear to have driven the Gini upwards. However, a fall in South Africa's employment share in the 1990s and the apparent establishment of the industry in Lesotho resulted in a levelling off of the Gini. Data for Lesotho indicates that the country gained 6.8 percent of the SADC share in 1999, up from apparent zero employment levels in 1980 and 1990.

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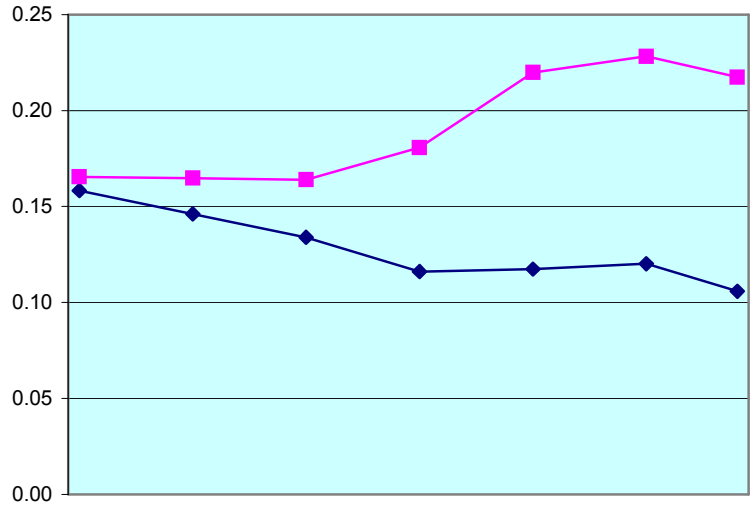
3.2.8 Wood Products, except furniture (311)

There has been a general trend of dispersion in the wood products industry, although during the decade 1985 to 1995 concentration levels were fairly stable with a slight trend upwards. The Gini fell from an initial level of 0.134 in 1980 to 0.1059 in 1999, indicating that the wood products industry is the most dispersed in the SADC region.

Figure 10: Wood Products, except furniture



	1970	1975	1980	1985	1990	1995	1999
331: Wood products, except furniture	0.1583	0.1462	0.1340	0.1161	0.1174	0.1202	0.1059
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

The most notable growth was found in Mozambique, where employment shot up from 20 employees in 1980 to 3074 in 1990. However, by 1999, employment had fallen to 1715 jobs. The industry also saw strong growth in Namibia during the 1990s where employment grew over sevenfold. Overall, there was strong growth in all countries with the exception of Swaziland and Zimbabwe, which has lead to a more equal share of the industry.

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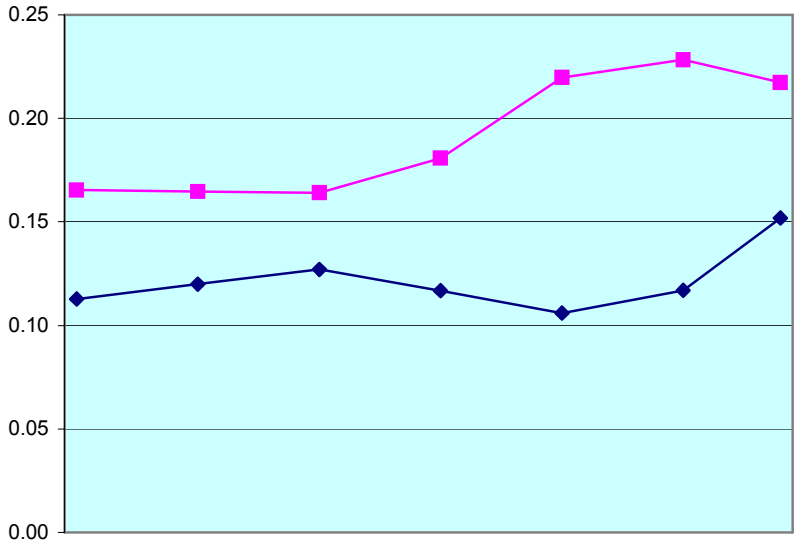
3.29 Furniture, except metal (332)

Like wood products, the Gini for the furniture industry remained one of the lowest, despite the industry concentrating in the 1990s. This particular industry appears follow an inverse path to the general trend of all industries, and is almost as a mirror image of the average on the chart below.

Figure 11: Furniture, except metal



	1970	1975	1980	1985	1990	1995	1999
332: Furniture, except metal	0.1128	0.1200	0.1271	0.1168	0.1059	0.1169	0.1519
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

The increase in the Gini up to 1980 shows the large degree of relative concentration of the industry in Lesotho, with the country's contribution to SADC in the furniture industry being six times its average contribution of manufacturing employment. However, by 1990, this ratio had dropped significantly, and no country had an overwhelming concentration ratio as measured by the location quotient. By 1999 the location quotient for Namibia in particular had increased dramatically, which, in conjunction with declining shares in all other countries except Zimbabwe, has driven the rising Gini coefficient.

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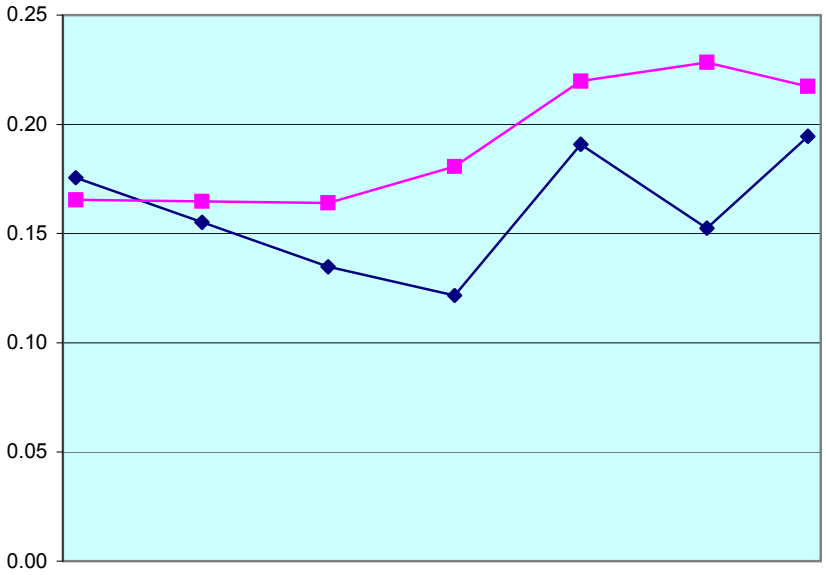
3.2.10 Paper and products (341)

The Gini for paper and products has fluctuated around an increasing trend, with the Gini increasing from 0.1348 in 1980 to 0.1945 in 1999. The industry has, however, remained below the average concentration levels for all industry.

Figure 12: Paper and products



	1970	1975	1980	1985	1990	1995	1999
341: Paper and products	0.1756	0.1552	0.1348	0.1216	0.1908	0.1524	0.1945
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

The general increase in the Gini appears to be the result of increases in the share of employment of Botswana, Malawi, Swaziland and Tanzania over the two decades. This has resulted in these countries (with the exception of Tanzania) showing relative specialisation in this industry as indicated by their location quotients. The fall in South Africa's share of employment from 82 percent in 1980 to 70 percent in 1999 is likely to have amplified the concentration in the above countries and the consequent rise in the Gini.

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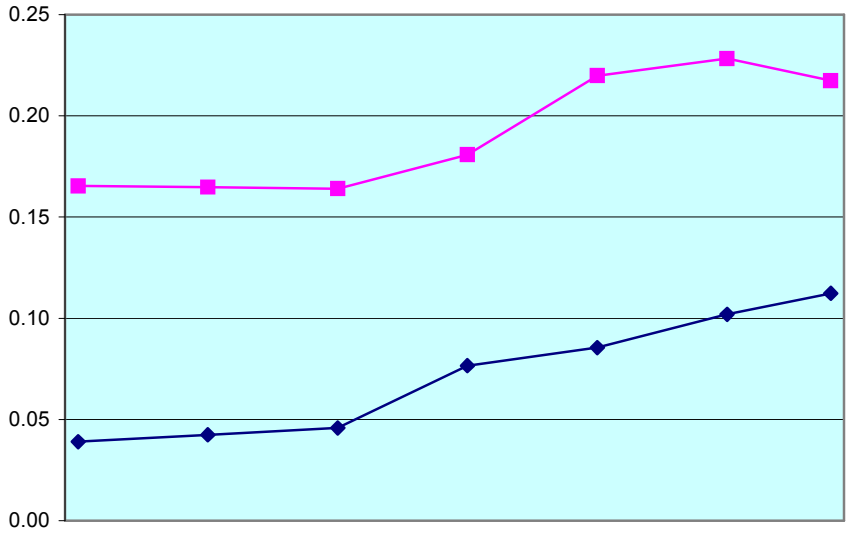
3.2.11 Printing and publishing (342)

This industry has maintained its position as the most dispersed industry in the region for the majority of the period, despite showing a consistent increase in the Gini. From an extremely low Gini of 0.0459 in 1980, the Gini grew significantly to 0.1123 in 1999. However, due to the increase in the overall average Gini the industry has remained relatively dispersed.

Figure 13: Printing and publishing



	1970	1975	1980	1985	1990	1995	1999
342: Printing and publishing	0.0391	0.0425	0.0459	0.0766	0.0856	0.1020	0.1123
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

The location quotients are broadly similar across countries, with Lesotho being the only country to stand out with a quotient of slightly over 2 in 1980. However, by 1999, Lesotho had lost this advantage, and growth in the industry in South Africa and Zambia meant that these two countries became relatively specialised, but not to any great degree. South Africa showed the greatest increase in market share, from 72 percent of SADC employment to 78 percent over the 20 years. Thus, the slight, but steady increase in the Gini is likely to be the result of the increased specialisation of South Africa and Zambia.

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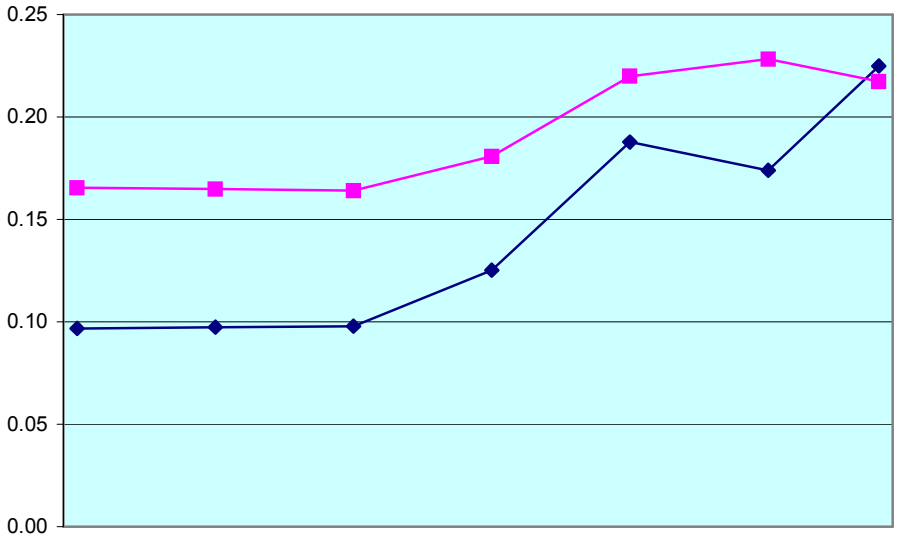
3.2.12 Industrial chemicals (351)

The Gini for industrial chemicals has increased rapidly, from 0.097 in 1980 to 0.2249 in 1999, after a slight dip in 1995. This has meant that the industry went from being the 5th most dispersed industry in 1980, being well below the average to the 10th most agglomerated industry in 1999, and lying above the average.

Figure 14: Industrial chemicals



	1970	1975	1980	1985	1990	1995	1999
351: Industrial chemicals	0.0968	0.0974	0.0979	0.1253	0.1878	0.1739	0.2249
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data

The rapid increase in the Gini is likely to be the result of extremely strong growth in South Africa and Botswana. Botswana increased their share of SADC production from 0.2 percent in 1980 to 1.9 percent in 1999. Likewise, and perhaps more importantly, South Africa's share of production increased from 76 percent in 1980 to 91 percent in 1999. However, missing data for South Africa in particular for 1999 in the next industry 'other chemicals (352)' may indicate that employment figures for 'other chemicals' had been included in this category. This would help explain South Africa's sharp increase in their share of SADC employment for industrial chemicals.

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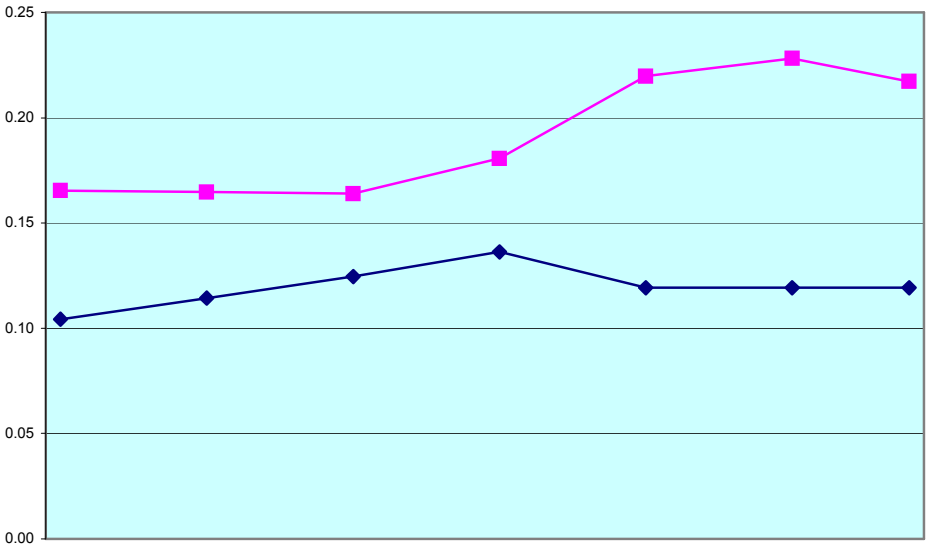
3.2.13 Other Chemicals (352)

Due to changes in data recording systems, and bad data, this sector could not be analysed properly. Data, in particular for South Africa, was not recorded for the 1990s which distorted the results significantly, and may have somewhat distorted the most recent Ginis for industrial chemicals. However, it is possible to analyse the Gini up to 1990. After increasing slightly from 1970 to 1985, the Gini fell in 1990 to levels similar to 1980. Thus there was not much change overall, and the industry remained one of the most dispersed industries in the region.

Figure 15: Other chemicals



	1970	1975	1980	1985	1990	1995	1999
352: Other chemicals	0.1043	0.1144	0.1245	0.1363	0.1192	0.1192	0.1192
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

There was growth in all countries in the region except for Botswana, Namibia and Swaziland, for which no data was recorded for any year, and Zambia, where employment fell by 23 percent. During the 1990s, although we cannot use the Gini coefficient, the growth of the 1980s was reversed for all countries with the exception of Malawi and Mauritius.

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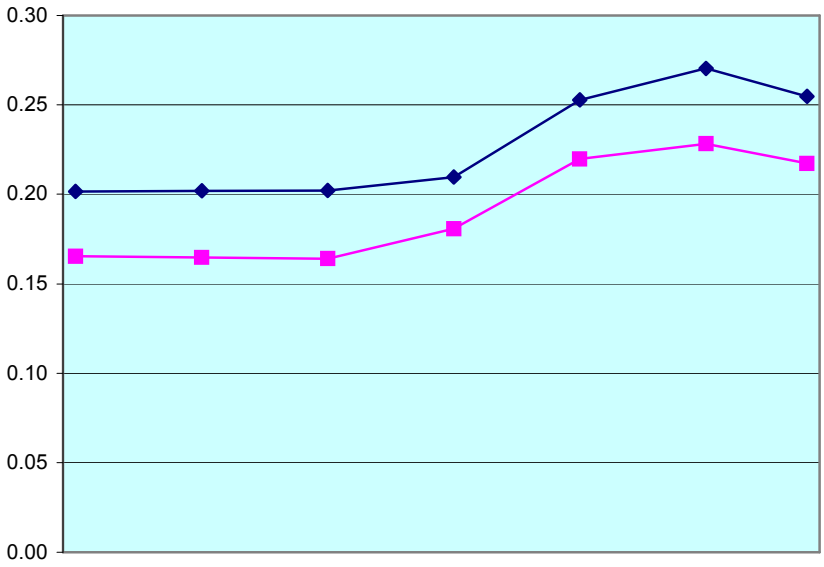
3.2.14 Petroleum refineries (353)

The Gini for petroleum refineries closely follows the average for all industries, although it remained less concentrated for the entire period.

Figure 16: Petroleum refineries



	1970	1975	1980	1985	1990	1995	1999
353: Petroleum refineries	0.2016	0.2019	0.2022	0.2097	0.2529	0.2704	0.2547
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data

There is no data recorded for five of the eleven countries for this industry. For those that the data indicates did have refineries, South Africa was heavily and increasingly dominant, with 94 percent of employment in 1999. Zambia was the only other country to maintain its share in the industry, while the data suggests that Namibia established a refinery in the 1990s. This could have contributed to the slight fall in the Gini in 1999, after a persistent rise, particularly from 1985. The petroleum industry has remained agglomerated above the average for the duration of the analysis.

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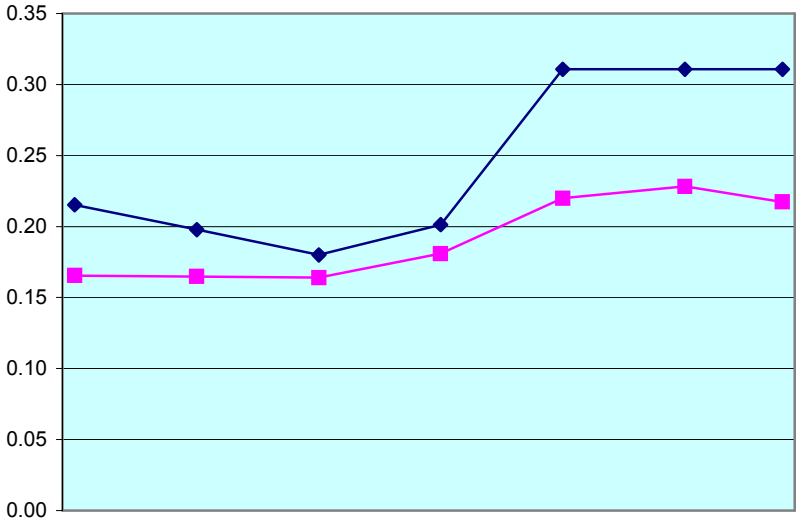
3.2.15 Miscellaneous petroleum and coal products (354)

This industry was also subject to data problems thus only allowing the computation of the Gini until 1990. During the 1980s, only three countries recorded employment in this sector, South Africa (with 90 percent of the employment), Zambia and Zimbabwe. In 1990, South Africa was the only country to register employment (of 6000 people), while in 1999 no data was recorded for any country. This could be due to the changing classification systems used. In the ISIC revision 3 this category does not exist and is presumed to be assimilated into petroleum products, which could account for South Africa's increased employment in that industry. Although the miscellaneous petroleum industry was entirely located in South Africa, the Gini of 0.3108 reflects that South Africa is not particularly specialised in this sector. Analysis of the Gini up to 1990 shows this industry to be slightly more concentrated than the average, although this difference increased in 1990. The large increase in 1990 could also indicate that data problems were already beginning to set in.

Figure 17: Miscellaneous petroleum and coal products



	1970	1975	1980	1985	1990	1995	1999
354: Misc. petroleum and coal products	0.2153	0.1977	0.1800	0.2012	0.3108	0.3108	0.3108
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

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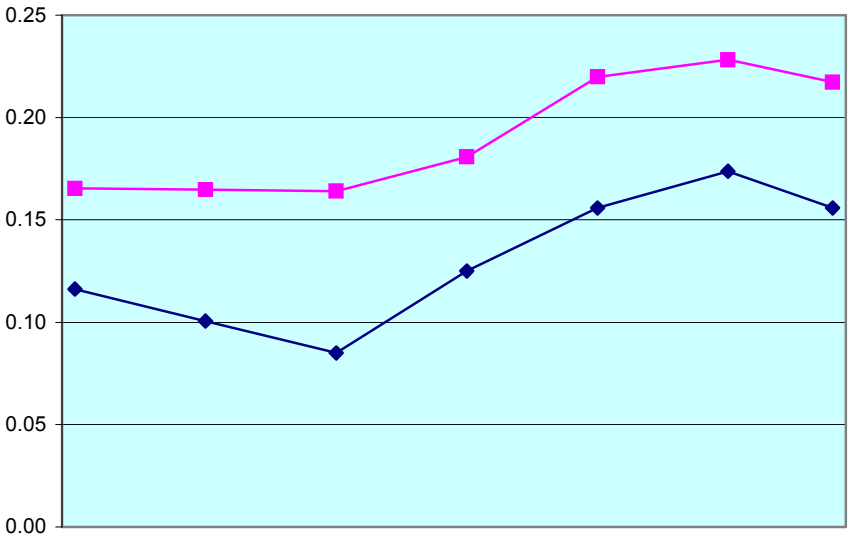
3.2.16 Rubber products (355)

Rubber products have remained one of the most dispersed industries, with the Gini following the overall SADC trend. In 1980, the Gini was equal to 0.085 which had increased to 0.1737 in 1995, and then following the trend, fell to 0.1558 in 1999, still well below the average.

Figure 18: Rubber products



	1970	1975	1980	1985	1990	1995	1999
355: Rubber products	0.1162	0.1006	0.0850	0.1251	0.1558	0.1737	0.1558
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

Zimbabwe and Malawi were the only countries to record positive growth levels over the two decades, with Zimbabwe's share of SADC increasing from 7 percent in 1980 to 13 percent in 1999. Thus the increase in concentration shown by the Gini displays a bias towards Zimbabwe and Malawi. Employment in South Africa fell, together with its overall share of SADC industry.

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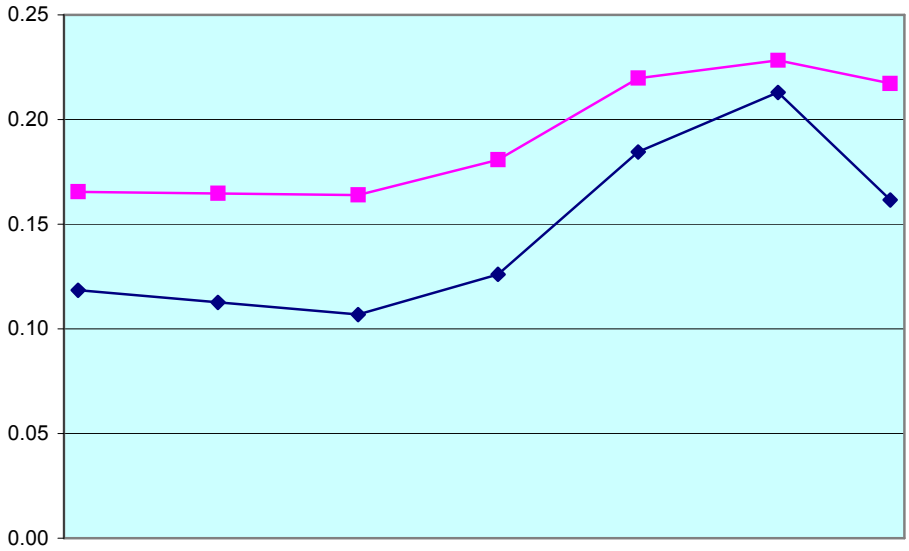
3.2.17 Plastic products (356)

As with rubber products, this industry followed the average trend for SADC, although the fall in concentration in 1999 was one of the largest. After peaking in 1995, the Gini fell from 0.213 to 0.1616 at the end of the decade. The industry remained less concentrated than the average level for every year.

Figure 19: Plastic products



	1970	1975	1980	1985	1990	1995	1999
356: Plastic products	0.1184	0.1127	0.1069	0.1260	0.1845	0.2130	0.1616
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

South Africa showed a particular tendency for specialisation in this industry as no other country had a location quotient over 1, with the exception of Malawi in 1990. However, the industry has grown most rapidly in Mauritius, increasing by almost 2 ½ times over the two decades. In line with the Gini, South Africa's share of SADC increased from 83 percent in 1980 to 86 percent in 1990 and then fell to 85 percent in 1999, thus indicating that the country could be a key driver of the Gini. Employment growth in Zambia and Zimbabwe merely maintained their share of total SADC employment in the industry.

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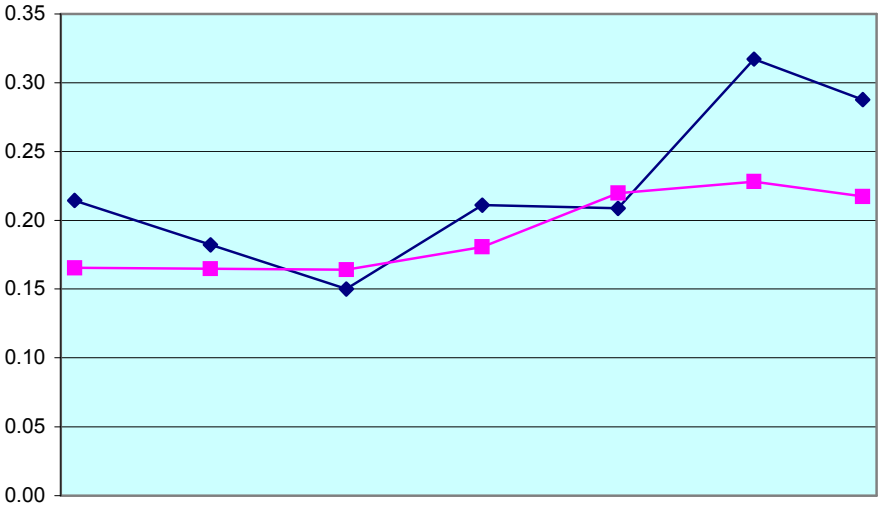
3.2.18 Pottery, china and earthenware (361)

The Gini for pottery followed the general SADC trend increasing substantially from 0.15 in 1980 to 0.317 in 1995 and then falling slightly to 0.287 in 1999. However, this relative measure does not fully reflect the extent to which this industry has agglomerated in South Africa. From a share of 84 percent in 1980, South Africa dominated the entire industry with a share of 99 percent in 1999. Zimbabwe, which previously had a share of 11 percent in 1980, was left with 0.6 percent in 1999. The data records no employment over the entire period in Botswana, Lesotho, Malawi, Namibia and Swaziland.

Figure 20: Pottery, china and earthenware



	1970	1975	1980	1985	1990	1995	1999
361: Pottery, china earthenware	0.2143	0.1822	0.1501	0.2109	0.2088	0.3171	0.2877
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

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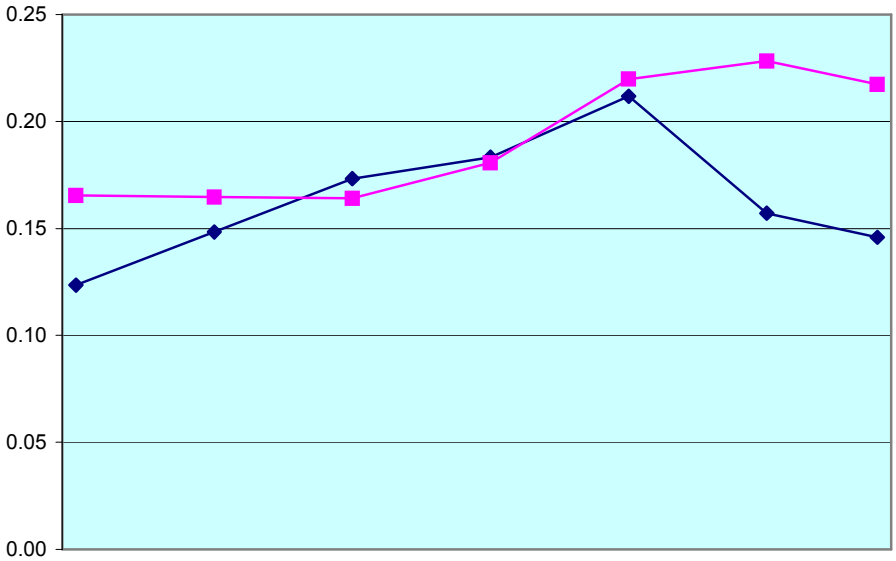
3.2.19 Glass and products (362)

Glass and products remains one of the most dispersed industries in SADC. The Gini shows a slight increase from 1980 to 1990, but then a greater decrease until 1999, where the Gini at 0.1458 was lower than 1980 levels.

Figure 21: Glass and products



	1970	1975	1980	1985	1990	1995	1999
362: Glass and products	0.1235	0.1484	0.1733	0.1834	0.2118	0.1571	0.1458
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

As with a number of the earlier industries, there is no data recorded for Botswana, Lesotho, Malawi and Namibia. The increase in dispersion could be the result of the decreasing specialisation of Swaziland. When the Gini was highest, Swaziland's locational quotient was 4.7, which dropped rapidly and significantly to 0.6 at the end of the period. The share of South Africa decreased during the 1980s, which complemented the upward pressure exerted by Swaziland on the rising Gini, but then increased during the 1990s to pull the Gini down.

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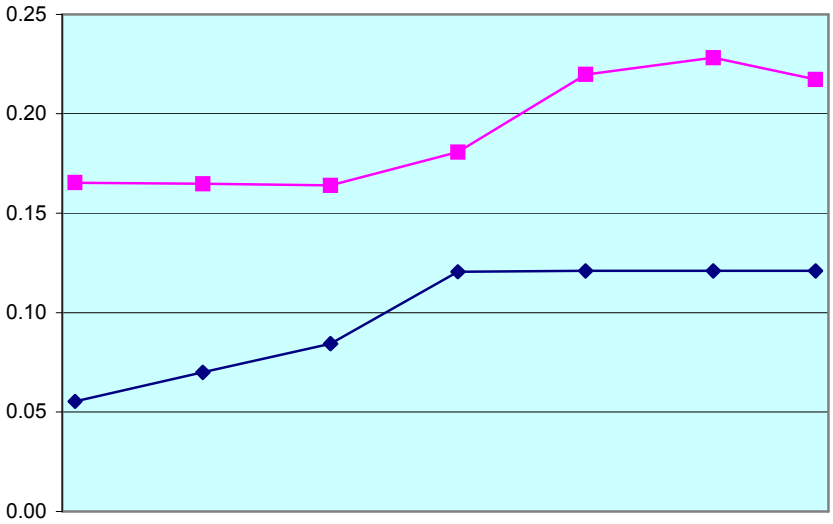
3.2.20 Other non-metallic mineral products (369)

Data from 1990 for South Africa was again a problem for this industry, hence the Ginis for the later 1990s become meaningless. It is interesting however, that the Gini increased rapidly from 1970 through to 1985 at which point the level of concentration levelled off and only rose very marginally in 1990. The industry remained in the 5 most dispersed industries throughout the analysis (using the 1990 Gini for later comparisons).

Figure 22: Other non-metallic mineral products



	1970	1975	1980	1985	1990	1995	1999
369: Other non-metallic mineral products	0.0553	0.0699	0.0844	0.1206	0.1210	0.1210	0.1210
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data

The only countries which had increases in employment in this industry during the 1990s were Tanzania and Zimbabwe. Falls in employment in Lesotho and Mozambique during this time reduced the impact of the large increases the countries had in the 1980s.

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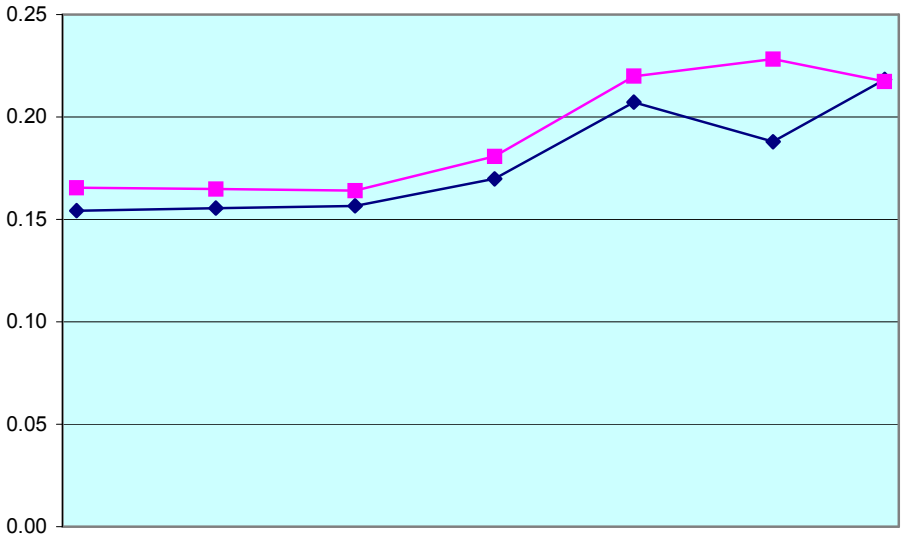
3.2.21 Iron and steel (371)

The iron and steel industry has become increasingly concentrated during every period with the exception of 1995, where there was a slight decrease in concentration. This industry followed the average closely, with iron and steel approximating the average in 1999.

Figure 23: Iron and steel



	1970	1975	1980	1985	1990	1995	1999
371: Iron and steel	0.1543	0.1555	0.1566	0.1698	0.2072	0.1879	0.2183
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

In absolute terms, however, the industry is heavily dominated by two countries, South Africa (with 80 percent of SADC employment) and Zimbabwe (with 15 percent). Five countries recorded no iron and steel manufacturing (and of those that did, all had falls in employment over the period).

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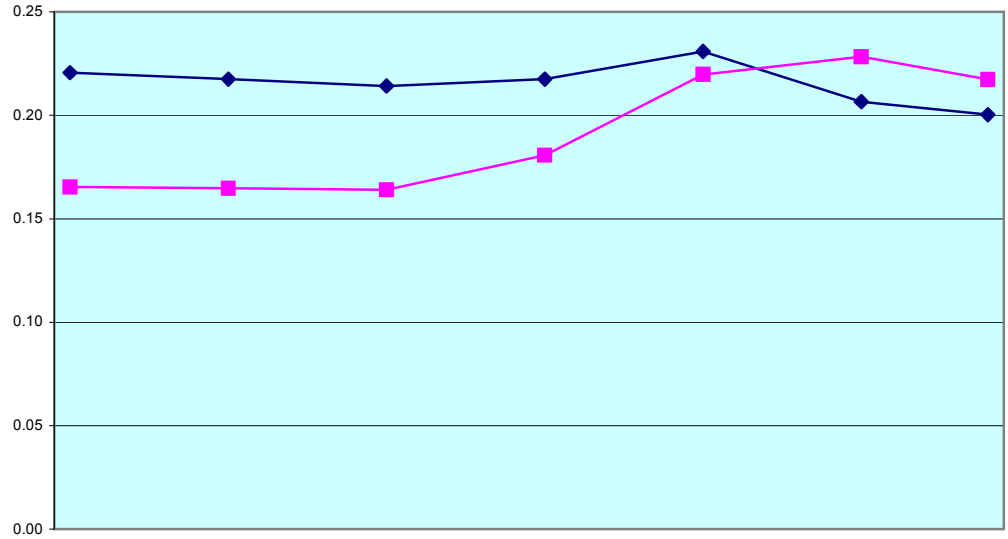
3.2.22 Non-ferrous metals (372)

The Gini for non-ferrous metals appears to be among the most stable, although there was a slight increase in concentration in the 1980s, followed by a slightly greater fall in the 1990s. The industry does not appear to be particularly affected by agglomeration forces over this time and, from being one of the most concentrated industries in 1980, it is now less concentrated than the average.

Figure 24: Non-ferrous metals



	1970	1975	1980	1985	1990	1995	1999
372: Non-ferrous metals	0.2207	0.2174	0.2141	0.2174	0.2309	0.2067	0.2003
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

Like the iron and steel industry, the data indicates that a number of countries did not record any employment in the non-ferrous metals industry, in this case over half the countries in the bloc. South Africa and Zimbabwe dominate (with 89 and 5 percent of SADC respectively). However, South Africa's share has been falling over time, the majority of which has gone to Tanzania whose contribution grew to 4 percent in 1999, and some to Botswana which contributed 1 percent up from nil in 1980. Thus, the redistribution from South Africa to Tanzania and Botswana appear to be the driving forces of the slight fall in the Gini from 1990. In 1999, the Gini was 0.2003, down from 0.2141 in 1980.

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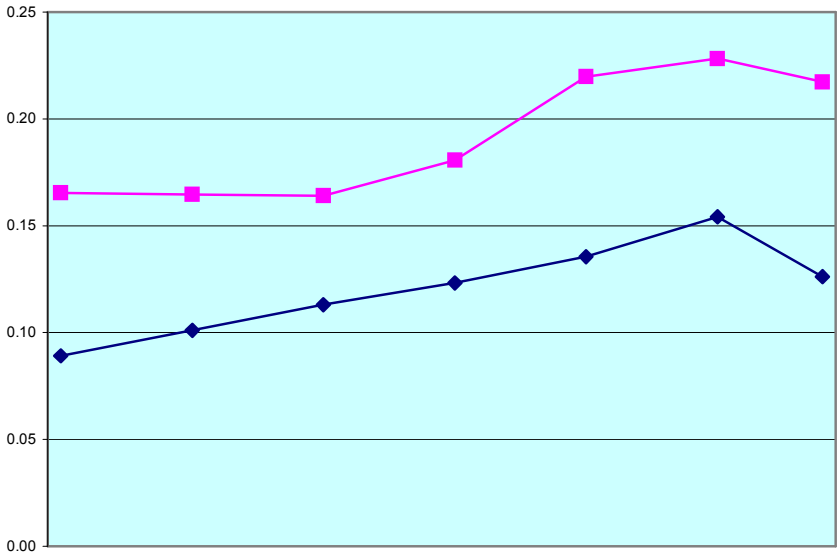
3.2.23 Fabricated metal products (381)

Fabricated metals follow the general path of SADC, with the Gini increasing until 1995 and then falling in 1999. In 1999, the Gini was at 0.1262 indicating that this is one of the most dispersed industries.

Figure 25: Fabricated metal products



	1970	1975	1980	1985	1990	1995	1999
381: Fabricated metal products	0.0891	0.1011	0.1131	0.1233	0.1355	0.1542	0.1262
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

The increase in the Gini has been driven by extremely strong growth in industry employment in Botswana to the degree of 800 percent in the 1980s. This led to a location quotient of 2.3 for Botswana, significantly above that of any other country. Lesotho and Mozambique also had very large increases in the 1980s. Unlike the other metals industries, all countries in the group possessed some fabricated metals production.

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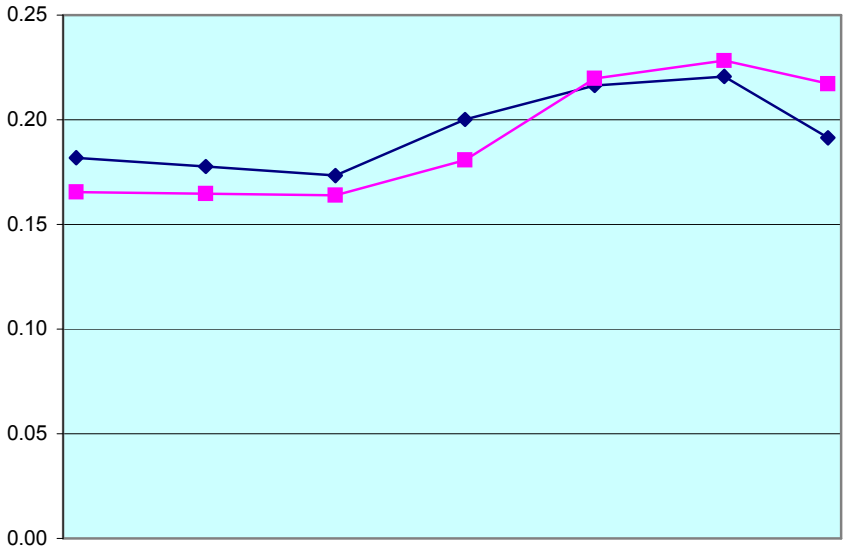
3.2.24 Machinery, except electrical (382)

The Gini coefficient for machinery closely follows the average trend of increasing to 1995 and then falling to 1999, although the fall in concentration in the 1990s was greater than the average.

Figure 26: Machinery, except electrical



	1970	1975	1980	1985	1990	1995	1999
382: Machinery, except electrical	0.1819	0.1777	0.1734	0.2001	0.2164	0.2207	0.1913
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

The industry trend appears positively related to the level of industry in South Africa. South Africa was the only country in which the share of employment in the machinery industry is greater than its share of overall industry, except in 1980 when Swaziland also had a location quotient over one. As the South African locational quotient increased so did the Gini, and then when it fell in the late 1990s the Gini began to fall.

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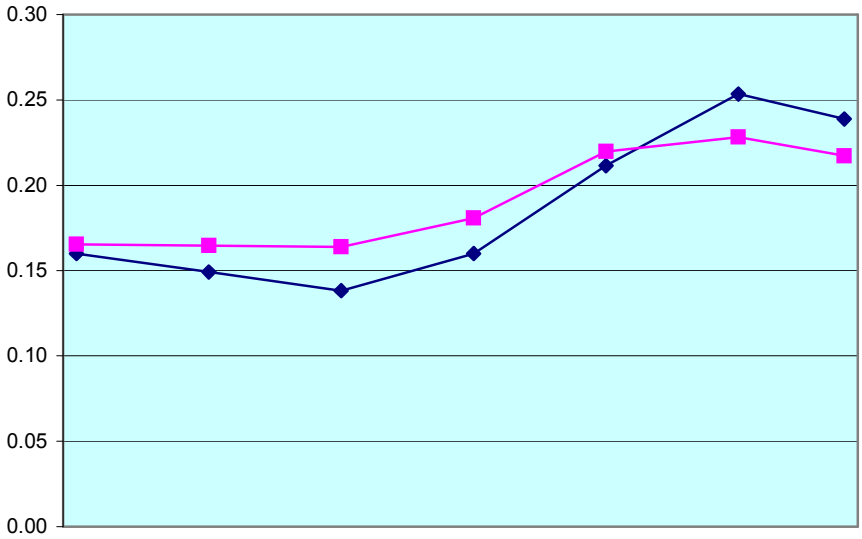
3.2.25 Machinery, electric (383)

As with non-electrical machinery, the Gini coefficient for electrical machinery followed the SADC trend of first increasing and then decreasing from 1995 to 1999. With a Gini coefficient of 0.2388 the industry has become one of the most concentrated industries in SADC.

Figure 27: Machinery, electric



	1970	1975	1980	1985	1990	1995	1999
383: Machinery electric	0.1600	0.1491	0.1382	0.1599	0.2114	0.2535	0.2388
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

The dominance of South Africa has become more evident over time, with South Africa contributing 86 percent of SADC employment in 1980 and 93 percent in 1999. Likewise, South Africa is the only country with a revealed comparative advantage indicated by the location quotient. Of the seven countries with employment recorded in this industry, the pace of growth in South Africa far outstripped the rest with an increase of 70 percent over the period. Tanzania and Zimbabwe also had increases, while the industry shrank in the remaining countries.

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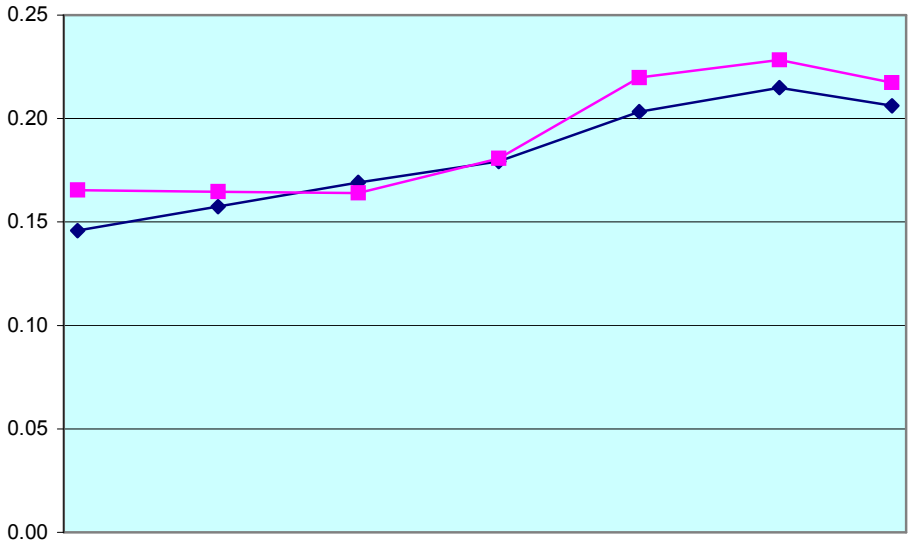
3.2.26 Transport equipment (384)

The Gini coefficient increased from 0.1691 in 1980 to 0.2149 when it reached its peak in 1995. Then following the SADC trend, the Gini fell to 0.2062 in 1999.

Figure 28: Transport equipment



	1970	1975	1980	1985	1990	1995	1999
384: Transport equipment	0.1459	0.1575	0.1691	0.1793	0.2034	0.2149	0.2062
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

South Africa contributed 90 percent of employment in transport equipment, while Zimbabwe contributed 5 percent and Tanzania 3 percent in 1999. None of the remaining countries had shares above 0.6 percent. As with the previous three industries, South Africa is the only country with a revealed comparative advantage in the industry, as measured by the location quotient. However, Zimbabwe is the only country which has had positive growth over the period.

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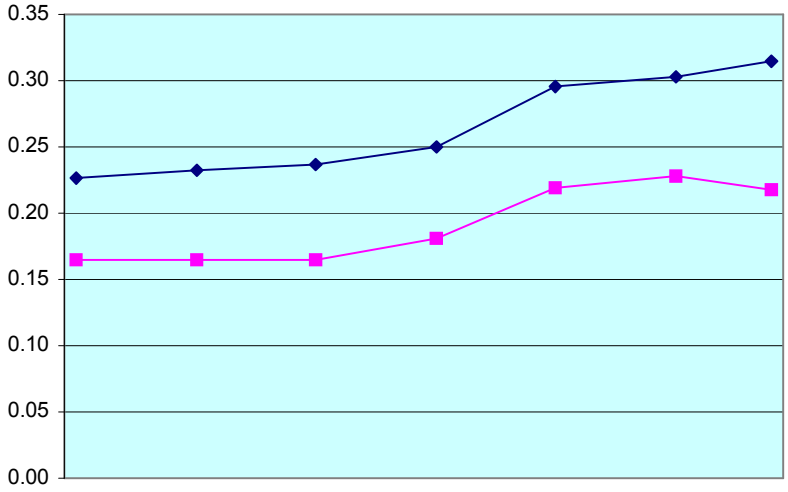
3.2.27 Professional and scientific equipment (385)

Professional and scientific equipment has maintained its place as one of the most agglomerated industries in SADC with increasing concentration levels. In 1999, the Gini coefficient was 0.3141 showing this to be the third most agglomerated industry in SADC. The industry has generally followed the average trend, while continuing to be relatively agglomerated.

Figure 29: Professional and scientific equipment



	1970	1975	1980	1985	1990	1995	1999
385: Professional & scientific equipment	0.2268	0.2320	0.2371	0.2501	0.2958	0.3025	0.3141
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

While South Africa dominates as usual and has had increasing levels of employment, its share of total employment at 74 percent in 1999, was significantly lower than its share in 1980 and 1990. This is mainly the result of rapid growth in Mauritius (which gained 8 percent of the market share) and Namibia (which gained 6 percent). Mauritius has possessed the greatest revealed comparative advantage of around 3 for 1980 and 1990. However, with growth in Namibia, Mauritius lost this advantage as Namibia's location

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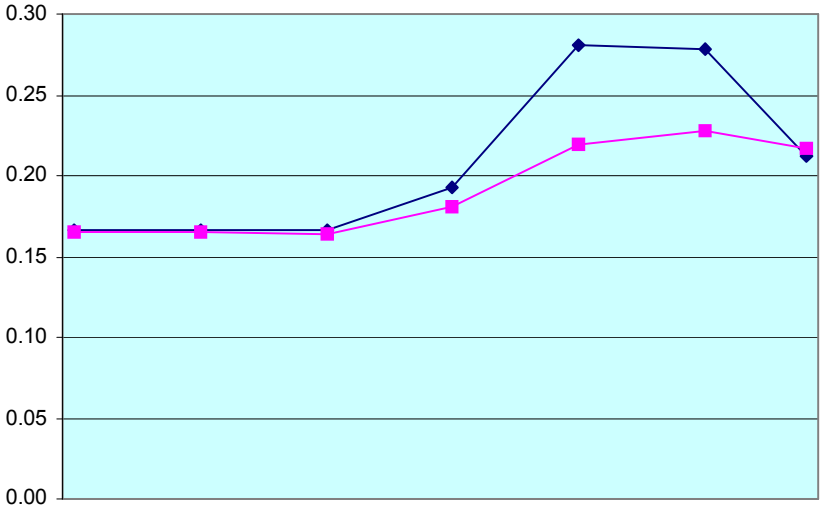
quotient was 5.3 in 1999. South Africa was the only other country with a location quotient over 1.

2.2.28 Other manufactured products (390)

The Gini for other manufactured products increased particularly rapidly from 1985 to 1990 where it broke its close affiliation with the trend of the average Gini. However, by 1999, other manufactured products had dispersed significantly, resulting in the Gini once again approximating the average.

Figure 30: Other manufactured products



	1970	1975	1980	1985	1990	1995	1999
390: Other manufactured products	0.1662	0.1664	0.1666	0.1928	0.2804	0.2782	0.2124
Average	0.1654	0.1647	0.1640	0.1808	0.2198	0.2283	0.2173

Source: Own calculations based on Unido (2003) data.

Of all countries, Botswana stands out the most. It appears that Botswana has recorded more industries in this sector than other country as their location quotient is extremely high. In 1980 the quotient was equal to 13.6. However, over time the quotient has decreased to 11.1 in 1990 and 6 in 1999. Lesotho and Mauritius were other countries that had high location quotients for this sector.

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4 Cross industry analysis within SADC

From the above individual industry analysis, it is apparent that the increased Gini coefficient has not necessarily meant polarisation towards South Africa. However, due to the vast differences in size of the manufacturing sectors of South Africa and the rest of the region it is necessary to investigate more fully the absolute levels of manufacturing that South Africa possesses in comparison with the rest of the bloc. To do this, we analyse how the percentage contribution of South Africa to employment in each manufacturing sector has changed over the period of analysis, and link this to the changes in the Gini. This information is summarised in table 2 below according to each individual industry, which is then categorised according to how the Gini has been affected. The industry is said to show concentration towards South Africa (concentration towards SA) if the increased share of South Africa's employment is likely to have led to an increase in the Gini. On the other hand, if the rise in the Gini is accompanied by a fall in South Africa's share of the industry, the industry is classified as concentrating in the periphery (concentration away from SA). A third classification is where there has been a fall in the Gini, which indicates dispersion. This can either be dispersion towards South Africa, if increased shares of South Africa mean that the industry's degree of concentration in the periphery is falling, or the other way around, with growth in the periphery reducing concentration in South Africa.

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Table 5: South Africa's share of SADC employment (percent)

Industry	1980	1990	1999	Gini shows
Total	73.2	68.9	70.1	
311: Food products	56.8	54.8	58.2	concentration towards SA
313: Beverages	61.3	56.7	54.8	concentration away from SA
314: Tobacco	19.3	19.2	23.0	dispersion towards SA
321: Textiles	59.7	49.6	45.6	concentration away from SA
322: Wearing apparel, except footwear	70.8	54.2	55.3	concentration away from SA
323: Leather products	73.8	61.0	65.5	concentration away from SA, then dispersion towards
324: Footwear, except rubber or plastic	72.7	79.0	60.2	concentration towards SA, then dispersion away
331: Wood products, except furniture	74.0	72.2	75.2	No significant change
332: Furniture, except metal	66.9	76.5	75.3	dispersion towards sa, then concentration to SA
341: Paper and products	82.2	73.0	69.7	concentration away from SA
342: Printing and publishing	72.3	74.2	78.1	concentration towards SA
351: Industrial chemicals	76.3	71.4	91.0	concentration towards SA
352: Other chemicals	79.6	78.5	-	dispersion away from SA
353: Petroleum refineries	82.8	92.7	94.1	concentration towards SA
354: Misc. petroleum and coal products	89.7	100.0	-	concentration towards
355: Rubber products	76.0	72.9	71.7	concentration away from SA
356: Plastic products	82.9	85.7	84.9	increase towards SA, then dispersion away
361: Pottery, china earthenware	84.3	79.7	98.8	concentration away from SA then increase towards
362: Glass and products	81.3	75.8	82.7	concentration away from SA then increase towards
369: Other non-metallic mineral products	79.5	78.5	-	concentration away from SA
371: Iron and steel	84.2	77.5	80.2	concentration away from SA then increase towards
372: Non-ferrous metals	93.8	90.4	88.8	concentration away from SA then increase towards
381: Fabricated metal products	82.9	78.2	80.9	concentration away from SA, then dispersion towards
382: Machinery, except electrical	89.8	89.8	86.9	same, dispersion away
383: Machinery electric	86.1	88.5	93.1	concentration towards SA
384: Transport equipment	89.4	87.8	89.6	concentration away from SA
385: Professional & scientific equipment	87.7	80.9	74.4	concentration away from SA
390: Other manufactured products	76.4	66.6	70.1	concentration away from SA, then dispersion towards
Simple average of all industries	76.2	73.8	66.0	concentration away from SA

- No data recorded for South Africa

Source: Own calculations based on UNIDO (2003) data.

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Industries that have been pulled towards South Africa throughout the duration of the analysis are food products, printing and publishing, industrial chemicals, petroleum refineries, miscellaneous petroleum and coal products, and electrical machinery. There are, however, some other countries that have also attracted these industries over this time, but their contributions have largely been overshadowed by South Africa. These countries are listed in the table below. The first column shows the countries which are still relatively specialised in the relevant industries, the second column shows the countries which have had an overall increase in employment in the industry and the third column shows the countries that have managed to increase their share of SADC employment in the industry.

Table 6: Increase in Gini due to concentration primarily in South Africa

	Countries with revealed comparative advantage (location quotient ≥ 1) in 1999	**Increase in employment (80-99)**	**Increased share of SADC employment (80-99)**
311: Food products	B (1.5), Mw (2.2), Mz (2.4), N (2.6), T (1.9), Za (1.7)	B, L, Mu, SA, T	B, L, SA, T
342: Printing and publishing	Mz (1.2), SA (1.1), Za (1.3)	L, Mu, SA, T	Mu, SA, Za
351: Industrial chemicals	B (1.6), SA (1.2), T (1.1)	B, Mu, SA, Za	B, SA
353: Petroleum refineries	Mz (1.3), N (1.4), SA (1.3)	SA, Za	N, SA, Za
354: Misc. petroleum and coal products	SA (1.5)	-	SA
383: Machinery electric	SA (1.3)	SA, T, Zw	L, SA

Key: B=Botswana, L=Lesotho, Mw=Malawi, Mu=Mauritius, Mz=Mozambique, N=Namibia, SA=South Africa, Sw=Swaziland, T=Tanzania, Za=Zambia, Zw=Zimbabwe
Source: Own calculations based on Unido (2003) data.

The footwear and plastic products industries became more concentrated, as shown by the Gini in the 1980s, but became more dispersed in the 1990s. This was because of an increased share by South Africa at first, which reversed in the 1990s as a number of peripheral countries gained an increasing share of the industry.

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Table 7: Increase in Gini due to concentration in South Africa in the 1980s, but fall in Gini due to dispersion to the periphery in the 1990s

	Countries with revealed comparative advantage (location quotient ≥ 1) in 1999	**Increase in employment (80-99)**	**Increased share of SADC employment (80-99)**
324: Footwear, except rubber or plastic	L (7.4), Za (1.2), Zw (2.3)	Mu, T, Zw, Mw*	L, Mu, Sw, T, Za, Zw
356: Plastic products	SA (1.2)	Mw, Mu, SA, Za, Zw	Mw, Mu, SA, Sw

* Increase in 1990s but overall decrease in employment 1980-1999

Source: Own calculations based on Unido (2003) data.

A large and varied number of industries became increasingly concentrated in the periphery over the last 20 years. These were beverages, textiles, wearing apparel, paper and products, rubber products, other non-metallic mineral products, transport equipment, and professional and scientific equipment. The increase in the Gini for transport equipment was largely driven by Zimbabwe being the only country with employment growth in this sector over the period.

Table 8: Increase in Gini due to concentration in the periphery

	Countries with revealed comparative advantage (location quotient ≥ 1) in 1999	**Increase in employment (80-99)**	**Increased share of SADC employment (80-99)**
313: Beverages	B (1), Mw (4.1), Mz (1.3), T (1.7), Za (1.9), Zw (1.5)	Mw, Mu, N, SA, Sw, T, Zw	B, L, Mw, Mu, T, Zw
321: Textiles	B (4), L (1.8), Mw (1.2), Mz (1.9), T (3.4), Za (1.6), Zw (1.5)	B, L, Mu, N, Za, Zw	Mw, Mu, N, T, Za, Zw
322: Wearing apparel, except footwear	L (3.9), Mu (5.6), Sw (1.2)	Mw, Mu, SA, Zw, T*	L, Mw, Mu, N

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341: Paper and products	B (2.2), Mw (3.2), Sw (5.1), T (1.2)	B, Mw, Mu, N, SA, Sw, T, Za, Zw	B, Mw, Mu, Sw, T, Zw
355: Rubber products	Mw (1.3), Mz (1.7), SA (1), Za (1.7), Zw (1.6)	Mw, Zw, T*	Mw, Zw
369: Other non-metallic mineral products	B (5.6), L (3.1), Mw (1.9), Mu (1.6), Mz (3.7), Sw (2), T (2.6), Za (5.3), Zw (4.9)	L, Mu*, Mz, T, Zw	L, Mz, T
384: Transport equipment	SA (1.3)	T*, Zw	N, SA, Zw
385: Professional & scientific equipment	Mu (3.2), N (5.3), SA (1)	Mu, SA, T, Z*	L, Mu, T, Za

* Increase in 1990s but overall decrease in employment 1980-1999

Source: Own calculations based on Unido (2003) data.

However, a number of industries became more concentrated in the periphery during the 1980s thus leading to an increase in the Gini, but began to be pulled towards South Africa in the 1990s increasing the value of the Gini further – but this time at the expense of the periphery. These were the pottery china and earthenware, glass and products, iron and steel, and non-ferrous metals industries.

Table 9: Increase in Gini due to concentration in the periphery in the 1980s then increase in Gini due to concentration in South Africa

	Countries with revealed comparative advantage (location quotient ≥ 1) in 1999	**Increase in employment (80-99)**	**Increased share of SADC employment (80-99)**
361: Pottery, china earthenware	SA (1.4)	SA, Za, Zw	Mu, SA, T
362: Glass and products	SA (1.2), Zw (1)	Mu, T, Zw	L, Mu, SA, T, Zw
371: Iron and steel	N (1.3), SA (1.1), Zw (1.8)	-	L, N, Za, Zw
372: Non-ferrous metals	SA (1.3)	SA, Zw	B, T, Zw

- no increases in employment

Source: Own calculations based on Unido (2003) data.

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Industries that do not fit directly into any of the above categories are the tobacco industry, furniture except metal, wood products except furniture, machinery except electrical, and other chemicals. The Gini for the tobacco industry became more dispersed as South Africa gained an increasing share of the industry's production, thus making the industry less concentrated in a few of the smaller countries, which gives this industry its particularly high Gini coefficient. Likewise with the furniture industry, growth in South Africa affected the relatively high concentration that a few small countries had in 1980 causing the Gini to first fall, and then, once South Africa had gained a critical amount of this industry, the Gini began to show a concentration in South Africa. The wood products industry has remained stable over the duration of analysis, with a slight reshuffling of the industry amongst the peripheral countries. South Africa's share was not significantly affected. Non-electrical machinery tended to disperse towards the periphery in the 1990s after remaining fairly stagnant in the 1980s. The final sector, other chemicals, became slightly more dispersed over the 1980s, with the periphery reducing South Africa's share.

Table 10: Other industries

	Countries with revealed comparative advantage (location quotient ≥ 1) in 1999	**Increase in employment (80-99)**	**Increased share of SADC employment (80-99)**
314: Tobacco **dispersion towards SA**	T (5.6), Za (1.5), Zw (4)	T, Za	SA, T, Za, Zw
332: Furniture, except metal **dispersion towards SA, then concentration to SA**	Mz (2.4), N (4.5), SA (1), Za (1), Zw (1.1)	Mu, N, SA, T, Sa, Zw	Mu, N, SA
331: Wood products, except furniture **No significant change**	Mw (1.5), Mz (1.7), N (1.9), SA (1.1), Za (1.3)	B, Mw, Mu, Mz, N, SA, T, Za, Zw*	B, Mw, Mz, N, SA, T, Za
382: Machinery, except electrical **No significant change, then dispersion towards periphery**	L (1.9), SA (1.2), Za (1.1)	Mu*, N, T, Za	L, Mw, N, T, Za
352: Other chemicals **dispersion towards periphery**	SA (1.1), Za (1.3)	L, Mw, Mu, Mz, T, Zw	L, Mu, Mz, T, Zw

* Increase in 1990s but overall decrease in employment 1980-1999

Source: Own calculations based on Unido (2003) data.

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A prominent theme in the literature is that those industries most prone to scale economies are the most likely to agglomerate (Kim, 1995; Amiti, 1999). Comparing the average firm size (total number of employees in the industry / number of firms in the industry), as a proxy for scale economies, to the distribution of SADC industry, scale economies were found to be an important feature of agglomerated industries. Eight of the 12 industries agglomerated above the average in SADC were also in the 12 industries most subject to scale economies. This is a marked difference from the situation in 1980, where only three of the top 12 most agglomerated industries were greatly affected by scale economies. Thus it appears that the reduction in transport costs has led to a particular emphasis on the location of large-scale industries. Likewise, 14 of the 16 industries agglomerated below the average were found to be in the 16 least affected by scale economies. Regressing the log of an industry's degree of scale economies[7] against their level of industrial concentration, scale economies were found to be significant at the 5 percent level for all years in the analysis. This suggests that within SADC scale-intensive industries tend to be agglomerated.

5 Conclusion

It is apparent from the analysis that a number of industries have shown a tendency to locate in the economic core of SADC (being South Africa), however there are other industries that appear to prefer to locate in other member states. The Gini coefficient is a relative measure, and thus does not measure the absolute level of concentration. Consequently, although the average level of concentration within SADC is found to increase steadily from 1970 to 1990, this is not necessarily towards South Africa. Between 1990 and 1995, the level of concentration increases further, but at a lower rate, and, by 1999 industry begins to disperse. Thus, much of the increase in concentration seen is towards peripheral countries. To further interpret the Gini, the changes in concentration were compared to the absolute changes in manufacturing employment in

[7] Taken to be the average firm size as measured by the number of employees

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South Africa. From this analysis, eight of the 28 industries analysed show particular tendencies to concentrate in the periphery. These being beverages, textiles, wearing apparel, paper and products, rubber products, other non-metallic mineral products, transport equipment, and professional and scientific equipment.

On the other hand, another six industries become more concentrated in South Africa over the whole period, namely; food products, printing and publishing, industrial chemicals, petroleum refineries, miscellaneous petroleum and coal products, and electrical machinery. Other industries that showed an increased tendency to locate in South Africa in the 1990s, but not in the 1980s include pottery, china, earthenware; glass and products; and the heavy industries of iron and steel; and non-ferrous metals. In the case of the latter, this may well be a case of inefficient industries collapsing in the periphery as South Africa increased their role in the region.

According to the Gini coefficient, the tobacco industry is by far the most concentrated industry, while the wood products industry is the most dispersed. It is also found that scale-intensive industries tend to be among the most concentrated.

Table 11: Balance of Industry

Towards South Africa		**Towards SADC (-SA)**
311: Food products	371: Iron and steel	313: Beverages
314: Tobacco	372: Non-ferrous metals	321: Textiles
323: Leather products	381: Fabricated metal products	322: Wearing apparel, except footwear
332: Furniture, except metal	382: Machinery, except electrical	324: Footwear, except rubber or plastic
342: Printing and publishing	383: Machinery electric	331: Wood products, except furniture
351: Industrial chemicals	384: Transport equipment	341: Paper and products
353: Petroleum refineries	385: Professional & scientific equipment	352: Other chemicals
354: Misc. petroleum and coal products	390: Other manufactured products	355: Rubber products
361: Pottery, china earthenware		356: Plastic products
362: Glass and products		369: Other non-metallic mineral products

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The results of this paper indicate that there appears to be a distinct bias towards locating industry in South Africa in the later part of the study, especially for scale intensive industries. However, this not the case for all industries, as roughly a third of the industries showed a preference for the periphery. In addition to being light industries to service the local market, the high degree of wage disparity in the region and present trade concessions from developed markets overseas towards the peripheral countries, will improve the attractiveness of peripheral location, particularly for export orientated firms in the above ten sectors.

This, however, represents a highly simplistic viewpoint, and there are a number of countries in addition to South Africa which appear to be competitive in attracting industry that has been pulled towards South Africa. These countries are indicated in the previous section 4. Thus, the above table is not categorical, but merely provides an indication of South Africa versus the rest of SADC as a whole.

Two main policy recommendations result from the paper. Firstly, individual countries in SADC need to promote those industries that show concentration tendencies in their country, and investigate further reasons as to why specific industries tend to locate in South Africa. Secondly, further study should be undertaken on the effect of reducing transport costs on specific industries. If a fall in transport costs disproportionately benefits industry that locates in the periphery, the periphery will gain from a rapid reduction of trade and logistical costs. However, if the converse is true there may be more adjustment costs in store.

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References

- AMITI, M. 1999. Specialisation patterns in Europe. **Weltwirtschaftliches Archiv**, 135(4): 573-593.
- DEVEREUX, M, P. GRIFFITH, R. and SIMPSON, H. 1999. **The Geographic Distribution of Production Activity in the UK**. University of Warwick and the Institute for Fiscal Studies.
- KIM, S. 1995. Expansion of markets and the geographic distribution of economic activities: the trends in U.S. regional manufacturing structure, 1860-1987*. **The Quarterly Journal of Economics**, 60(4):881-908.
- KRUGMAN, P. 1991a. **Geography and Trade**. Leuven: Leuven University Press.
- KRUGMAN, P. 1991b. Increasing returns and economic geography. **Journal of Political Economy,** 99:484-489.
- MARCON, E. and PUECH, F. 2002. **A New Method to Evaluate Spatial Economic Activity and its Application to Two French Areas**.
- PETERSSON, L. 2002. The new economic geography and industrial location in SADC. **The South African Journal of Economics,** 70(8):1222-1246.
- SPIEZIA, V. 2002. **Geographic Concentration of Production and Unemployment in OECD Countries**. Paris: OECD.
- STIRBOECK, C. 2002.
- STIRBOECK, C. 2001. **Agglomeration Tendencies in EU Regions: Where Does Capital Go?** Centre for European Economic Research (ZEW), Mannheim, Germany.
- UNIDO. 2003. **International Yearbook of International Statistics 2003.** Cheltenham: Edward Elgar. In combination with UNIDO data from the Trade and Industrial Policy Strategies (TIPS) database.

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