THE MOTOR INDUSTRY DEVELOPMENT PROGRAMME AND LOCAL CONTENT: HAS THE MIDP'S OBJECTIVE OF INCREASING THE LOCAL SOURCING OF COMPONENTS BEEN ACHIEVED?

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MINI DISSERTATION SUBMITTED FOR MASTER OF COMMERCE (M COM) IN ECONOMICS AT THE UNIVERSITY OF CAPE TOWN

AKNOWLEDGEMENTS

Professor Anthony H Black, my supervisor, played a major role in this dissertation and his contribution is acknowledged and greatly appreciated.

ABSTRACT

The 1995 Motor Industry Development Programme (MIDP) was an attempt to transform the South African Automotive industry into a globally competitive industry. The import substitution policies, before the MIDP, which were characterised by high tariffs and local content requirements were replaced by an import-export complementation scheme, which encourages competitiveness by the introduction of foreign competition and assistance for exporting. This dissertation investigates whether the MIDP has increased value added or local content in locally manufactured motor vehicles, as anticipated by policy makers.

The findings in this dissertation rely heavily on the limited data that is available in the industry. A dataset of component firms is used to establish the current trends with regard to local content in the domestic component industry. Export data is used to measure local content in both motor vehicles and component exports. Local content in the component purchases of the carmakers is also measured using a range of industry statistics.

This dissertation shows that the domestic automotive industry has restructured and rationalised vehicle production, but despite this, local content in locally manufactured motor vehicles remains low. There appears to be a structural break between the domestic component industry and the vehicle assembly industry. The South African component industry manufactures a large quantity of raw material intensive components that are targeted at foreign markets. In terms of the MIDP these exports can be used to offset import duties. The growing domestic vehicle production has to a significant effect been supplied by an increase of component imports. The major foreign owned component firms seem to be also involved in just-in-time assembling of these components for the carmakers. This is implied by the low levels of local content in their products.

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ABBREVIATIONS

ASEAN	:Association of Southeast Asian Nations
CBU	: Completely Built-up Unit
CKD	: Completely Knocked Down
DFA	: Duty Free Allowance
DTI	: Department of Trade and Industry
GDP	: Gross Domestic Product
IEC	: Import-Export Complementation
IRCC	: Import Rebate Credit Certificate
ITAC	: International Trade Administration Commission
LCR	: Local Content Requirement
MIDP	: Motor Industry Development Programme
MITG	: Motor Industry Task Group
MNC	: Multinational Corporation
NAACAM	: National Association of Automotive Component and Allied Manufacturers
NAAMSA	: National Association of Automobile Manufacturers of South Africa
OEM	: Original Equipment Manufacturer
PAA	: Productive Asset Allowance
PGM	: Platinum Group Metal
SAABC	: South African Association of Benchmarking Club
SADC	: Southern African Development Community
SVI	: Small Vehicle Incentive
TRIAD	: Region made up of North America, Japan and Western Europe
UNIDO	: United Nations Industrial Development Organization
WTO	: World Trade Organisation

1. INTRODUCTION

Trade and industrial policy under apartheid was characterised by protection, focused on certain strategic sectors. The new government has liberalised trade and adopted a less interventionist industrial policy, and is guided by the objectives of achieving global competitiveness and the availability of consumer goods at competitive prices (Roberts, 2005).

The automobile industry is one of the industries that received substantial state support, which dates back as early as 1920, before it was liberalised in 1995 by the launch of the Motor Industry Development Programme (MIDP). The aim was to address the industry's inefficiencies, mainly the high production costs due to the production of a large number of vehicle models at low volume. The MIDP has been generally viewed as a great success. The industry has restructured production, attracted foreign direct investment and has been largely integrated into the global production networks. Despite this 'success', the effect of the MIDP on the value added or local content in locally manufactured vehicles is not clear. A motor vehicle is made up of some 10, 000 components (Black and Bhanisi, 2006) and much of the potential benefit from the MIDP could, therefore, be achieved through increased domestic manufacturing and sourcing of these components.

This dissertation focuses on the question of the effect of the MIDP on the levels of local content in domestically assembled vehicles. The scepticism with regard to any positive effect on local content by the MIDP is mainly caused by the surge in component imports that has been experienced. This increase in component imports has been caused mainly by the gradual reduction in component tariffs and by the ability to rebate most of the import duty on component imports. This dissertation investigates local content in the automotive industry, using the limited industry data that is available. The focus is limited to the policy effects on local content in vehicles manufactured in South Africa, rather than the macroeconomic factors that might have had an effect on automotive trade and, therefore, on local content.

Section 2 considers the changing operational relationship between carmakers and component suppliers in the global environment and their effect on local content in the developing countries. Section 3 summarises the history of local content requirement policies in the South African automotive industry, and this is followed by a discussion of the structure of the MIDP and its expected effect on local content. Section 4 highlights the current developments in the South African industry, with special emphasis placed on those developments that have led some observers to believe that the MIDP has reduced local content in the automotive industry. Section 5 describes the data and the methodology used to measure local content. In Section 6,

local content in component firms' products is measured using a database of component manufacturing firms. Section 7 uses various local content measures compiled by industry institutions to measure local content in the component purchases and vehicle exports of the carmakers. Section 8 concludes the dissertation and provides policy recommendations.

2. CHANGES IN GLOBAL PRODUCTION VALUE CHAINS AND THEIR EFFECT ON LOCAL CONTENT

The level of local content in South African manufactured vehicles is indicative of the relationship between the locally based carmakers, which are all affiliates of multinationals, and the suppliers (South African and foreign owned). This relationship is strongly influenced by the relations between carmakers and suppliers at the global level, which have been undergoing major restructuring[1] (Humphrey, 2000; Humphrey and Memedovic, 2003; Humphrey et al., 2000; Dicken, 2002; von Corswant and Fredriksson, 2002; Lung, 2003).

One cause of this restructuring is the fact that the main global automotive market, the Triad market (Western Europe, Japan and North America), is 'mature' and offers very limited growth prospects. The limited market growth prospects in the Triad region have caused the carmakers to focus on the developing countries for growth opportunities. This has seen carmakers establishing operations in these countries. The establishment of operations in these countries allows carmakers to be closer to rapidly growing markets (preferably before competitors) and also allows them to take advantage of low wages and flexible labour laws in many of these developing countries (Lung, 2003).

Developing countries have also attempted to exploit the less promising growth prospects of the Triad markets by incentivising the OEMs to invest (Humphrey et al., 2000). Some developing countries with smaller domestic markets have formed trading blocks, such as Mercosur and ASEAN[2], which offer the OEMs much bigger markets. These automotive spaces are particularly attractive to carmakers because of the gains in economies of scale in production and the relatively lower wages, which significantly reduce production costs. Some developing countries, like Mexico, which are geographically close to large developed markets, have established free trade areas with these developed countries, where they offer relatively lower production cost sites.

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[1] See Womack et al. (1990) for earlier discussions of these changes in the Western auto industries

[2] Asian regional block, made up of Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei Darussalam, Vietnam, Lao People's of Democratic Republic, Burma/Myanmar and Cambodia.

China and India have attracted significant investments from OEMs by opening up their previously protected automotive industries to foreign investors. Both of these two developing countries are attractive to OEMs because of their large populations with rapidly increasing income levels and low motorisation rates. Judging by the high level of foreign investment being attracted to its automotive industry and by the current growth in automotive production, China has become the latest success in the global automotive industry. Its growing role in the global automotive industry is demonstrated by the fact that China alone was responsible for 45 % of the global growth in sales between 2000 and 2005, and 48 % of the global growth in vehicle production between 2000 and 2006 (Chotai, 2007)[3]. The main obstacle to China's growth is its restriction on foreign ownership of assembly ventures (Chotai, 2007), and this as a result limits the integration of China's operations into the global networks.

Despite their relatively smaller domestic market size, some developing countries, such as South Africa and Australia have managed to maintain independent automotive industries by integrating their industries into global production networks. This has been done by a combination of export support and reduced protection for their industries to accommodate vehicle and component imports. The disadvantage with this approach is that the host country government loses a degree of control, as these industries are subject to the varying global production strategies of the OEMs (Humphrey and Memedovic, 2003).

These latest strategies of the developing countries have managed to attract considerable investment and have led to considerable growth in their production levels, and have reduced the global production share of the Triad region from 80 % in the late 1990s (Dicken, 2002) to 67 % in 2006 (Chotai, 2007). The demand potential in these countries has not been fully realised, and as a result, the strategy by OEMs has been to export a significant share of production to the developed markets. This has grown the export share of automotive products for developing countries, and reduced that of the Triad industries as shown in Table 1 (EU 25 group includes some developing countries and this would explain the increase in its export share). In what has been termed 'follow sourcing', the large global component manufacturers have also moved into these new production locations, because of their close working relationships with the carmakers.

The intense competition in the Triad region, exacerbated by the slow growing market, has also compelled carmakers to make certain changes to their cost structures, and to re-evaluate

[3] See also VAD (2007) for the latest industry growth statistics in the global automotive industry.

the products they offer. The most apparent change in automotive products is the shortening life span of the vehicle models (Humphrey, 2000; Humphrey *et al.*, 2000; Corswant and Fredriksson, 2002). This is seen as an effort to stimulate demand by offering more variety. This is of special importance for the Triad markets where most of the purchasing of cars is for replacement purposes. This shorter lifespan of the vehicle models requires additional product development activities from the carmakers, with huge financial commitments.

Table 1. Regional Percentage Share in Global Automotive Exports (1980-2005)

Exporter	1980	1990	2000	2005
European Union (25)	-	-	49.8	53.3
Japan	19.8	20.8	15.3	13.5
United States	11.9	10.2	11.6	9.4
Canada	6.9	8.9	10.5	7.3
Korea, Republic of	0.1	0.7	2.6	4.1
Mexico a	0.3	1.4	5.3	3.9
Brazil	1.1	0.6	0.8	1.3
China a	0.0	0.1	0.3	1.1
Turkey	0.0	0.0	0.3	1.0
Thailand	0.0	0.0	0.4	0.9
South Africa	0.1	0.1	0.3	0.5
Taipei, Chinese	...	0.3	0.4	0.4
Australia	0.2	0.2	0.4	0.4
Argentina	0.1	0.1	0.4	0.3
United Arab Emirates b, c	...	0.0	0.2	0.3
Above 15	...	...	98.6	97.7

Source: WTO International Trade Statistics (2006)

Carmakers have tried to manage the additional complexity and costs associated with these frequent product development activities by outsourcing more product development activities to their suppliers (Humphrey and Memedovic, 2003; Humphrey, 2000). This bigger responsibility given to the suppliers warrants a closer relationship between them and the carmakers, which now have to work with a smaller number of large first-tier[4] suppliers. These suppliers have sufficient resources to conduct research and development, innovate and manufacture the required parts at superior quality at low cost. These suppliers would normally be based in developed countries.

[4] First-tier components suppliers are large component firms that have a close, direct and strategic working relationship with carmakers. They design and manufacture components, but also source some from smaller suppliers, such as tier-two firms.

Production cost pressures have also compelled carmakers to restructure the organisation of their production processes. The trend has been a movement from an assembly of small parts, traditionally supplied by their in-house component manufacturing divisions and other smaller suppliers, to 'modular parts' or component subsystems, which tend to be sourced from the first tier suppliers (Humphrey, 2000).

These strong relationships between the carmakers and the first tier suppliers mean that when carmakers establish operations in developing countries they will tend to favour these foreign companies, and will import components from them when these companies fail to follow them to these new regions. Therefore, unless these suppliers invest in the new locations, the result is frequently lower levels of local content in vehicles assembled in the developing country industries.

This, therefore, presents a bleak picture for the domestically owned firms in the developing countries, which were the previous beneficiaries of local content policies, and were responsible for local content in vehicles manufactured in the developing countries. In order to supply OEMs in their domestic markets, these firms now need to be part of the global production networks. This could be achieved through supplying OEMs as first tier firms. This is out of reach for most component firms in developing countries, due to huge financial requirements needed to follow OEMs to new markets, the high product development costs and the managerial expertise required for managing the rest of the production value chain by tier one firms (Humphrey and Memedovic, 2003). The more viable approach has been the incorporation of their operations into the follow-source, tier one firms that have followed OEMs into their domestic industries. This has been done by giving up majority stakes of the firms to the MNC tier one firms.

3. HISTORY OF LOCAL CONTENT POLICIES IN THE SOUTH AFRICAN INDUSTRY AND EXPECTED EFFECT OF THE MIDP ON LOCAL CONTENT

3.1 The History of Protection for the South African Automotive Industry

Higher levels of value added in the automotive industry have traditionally been enforced by the local content requirement (LCR) policies. A LCR policy imposes a minimum percentage of content that needs to be met by local inputs, in any locally produced product. These policies are mainly applicable in industries where the manufacturing process can be broken

down into different stages or the final product is made up of intermediate components that can be sourced from many suppliers (UNIDO, 1986).

The main objective of these LCR policies, which are usually used together with other protective measures such as tariffs and joint venture requirements, has been the development of domestic component industries. In the automotive industry, the high tariffs on vehicles protect the carmakers from foreign competition, while the LCR policies guarantee component firms a market for their products. LCR policies have, however, been deemed trade distorting by the World Trade Organisation (WTO) and are being phased out (Humphrey and Memedovic, 2003).

The history of import substitution policies[5] in South Africa can be traced back to the 1920s, when Ford and General Motors first established operations in the country. High tariffs were used to attract these automobile companies into the country, despite the small domestic market. These high tariffs, which were placed on built up vehicles, did not result in the development of a strong component industry and local content levels remained only at 20 percent at that stage (Black, 2001). The desire for a domestic component industry and the need to save foreign exchange prompted a series of local content requirement programmes, which began in 1961. Rising income levels during the gold boom years led to some expansion in the market and in profits for carmakers. Carmakers tried to increase their market share by the production of more vehicle models, which reduced volumes in component production even further.

As a result, local content requirements were raised to 52 percent, as measured by the weight of local components in a vehicle (Duncan, 1997). These local content requirements were further raised to 66 percent for light passenger vehicles under Phase 4 in 1971, with light commercial vehicles also included under Phase 5 in 1980 (Black, 2001). These local content requirement policies did not manage to resolve the problem of high unit costs, resulting from the low production volumes per vehicle model. For example, in 1975 the 13 OEMs operating in South Africa produced 39 vehicle models, which were serviced by 300 suppliers (Lamprecht, 2005). One of the main causes of this was the inward orientation of the industry. It was also easy for carmakers to meet the local content requirements by simply increasing the weight of the locally sourced inputs, while increasing imports of lighter, technologically advanced components (Duncan, 1997; Black, 2001).

Phase 6, introduced in 1989, was the first policy attempt to deal with this problem by measuring local content by the value, not the weight, of locally produced components in a vehicle. Local content was also measured on a net foreign exchange usage basis. This meant that exports by assemblers also counted as local content. The growth in exports was expected to increase economies of scale in component manufacturing and reduce costs. The cheaper components were expected to increase local content through increased local sourcing by carmakers. The result was the opposite, because the flexibility[6] in the sourcing of components increased the effective levels of protection and profitability for carmakers. This resulted in further proliferation of vehicle models (Lamprecht, 2005) as carmakers attempted to gain more market share. For example, in 1993 the seven OEMs produced 39 vehicle passenger and light commercial vehicle models (Lamprecht, 2005) for the relatively small domestic market at that time. This necessitated a drastic change in policy to transform the inward orientated, low volume and technologically backward industry. The Motor Industry Task Group (MITG) was appointed to investigate and recommend future automotive policy direction. Its recommendations led to the introduction of the MIDP.

3.2 The MIDP and its Expected Effect on Local Content

The MIDP, launched in 1995, was an attempt by policymakers to incentivise the industry to rationalise vehicle production and to prepare it for future foreign competition. This was to be achieved by encouraging both exports (to increase production and improve economies of scale) and imports (to introduce foreign competition and to enable carmakers to increase or maintain their market share).

This restructuring of the industry was designed to achieve the three main objectives of the MIDP, which were to enable the industry to;

- provide high quality and affordable vehicles and components to domestic and international markets.

- provide sustainable employment through increased production

[5] See Black (1994) and Lamprecht (2005) for a more detailed analysis of the import substitution policies in South Africa before the MIDP.
[6] Carmakers could increase component imports and still meet the requirements of the local content programme by expanding exports.

- make a greater contribution to the economic growth of the country by increasing production and achieving an improved sectoral trade balance.

The major policy parameters were:

- A tariff phase down schedule that reduced nominal tariffs rates to 40 % for completely built-up (CBU) vehicles, and 30 % for completely knocked down (CKD)[7] components by 2002, and at a rate that was faster than that required by the WTO.

- Abolition of local content requirements and the establishment of an import-export complementation (IEC) scheme. This allowed both carmakers and suppliers to earn "import rebate credit certificates" (IRCC) from exporting. These could be used to either offset import duty on the imports of completely built-up units (CBU) and components, or could be traded in the open market.

- A duty free allowance (DFA) for assemblers of 27% of the wholesale value of the vehicle for the importation of original equipment components.

- A Small Vehicle Incentive (SVI) provision was made in the form of a higher duty free allowance for low cost vehicles.

The main element, the IEC scheme, was to enable carmakers to offset most of the import duty on imports of vehicles and components by exporting. The value of the IRCCs generated by exports equalled the local content value of exports. In order to cope with foreign competition, due to reduced tariffs on vehicles, carmakers were expected to reduce costs by reducing the number of models that they were producing and increase volumes per model. They would then import the rest of the models, at close to world prices using the IRCCs to offset import duties, in order to maintain their market share.

Behind these measures to increase volumes per vehicle model was an attempt to increase local content. The expected increase in demand for components, due to the production of higher vehicle volumes per model, would lead to gains in economies of scale and productivity. This would make locally manufactured components cheaper and would improve local content. The MIDP was then expected to transform the domestic component industry and enable it to supply cheaper, technologically advanced products to a restructured domestic vehicle

[7] A CKD pack of components is a pack of components that is imported to be assembled into a vehicle.

assembly industry and to the export market. This positive effect on local content was expected to offset the negative effect caused by the reduction in tariffs on components.

Increasing local content in vehicles by cheaper, technologically advanced local components was key to the achievement of the MIDP's objective of cheaper vehicles. Higher levels of local content would also be very important for the objective of improving the sectoral trade balance, because higher local content in vehicles means lower component imports and higher foreign exchange generated per exported vehicle.

Since its inception in 1995, the MIDP has gone through a number of reviews, the first one in 1999 and the second one in 2002, where it was decided by government to extend the programme to 2012, but at reduced levels of assistance to the industry. Tariffs were to be reduced further and the value of IRCCs generated through exports was to be reduced through the ratios shown in column 4 of Table 2 below. In the 2002 review, the SVI was also phased out as vehicle price trends had made it worthless (Lamprecht, 2005).

Table 2: Reduced Assistance for the Vehicle Industry under the MIDP

Year	Import duty		Value of export performance
	Built up light vehicles	Original equipment components	Built up vehicles and components (excluding tooling)
1999	50,5%	37.5%	100%
2000	47%	35%	100%
2001	43,5%	32,5%	100%
2002	40%	30%	100%
2003	38%	20%	94%
2004	36%	28%	90%
2005	34%	27%	86%
2006	30%	26%	82%
2007	30%	25%	78%
2008	29%	24%	74%
2009	28%	23%	70%
2010	27%	22%	70%
2011	26%	21%	70%
2012	25%	20%	70%

Source: Lamprecht (2006)

As shown in Table 2, in 1999 an exporter of R 100 worth of qualifying products with 50 percent local content would generate IRCCs valued at R50 (R 100 x 50 %). These IRCCs could be used to rebate all the 37.5 % import duty on components that are valued at R 50, should the holder of these IRCCs decide to import components. In 2004, an exporter of R 100 worth of qualifying products with 50 % local content would generate IRCCs worth only R 45

(R 100 x 50 % x 90 %), which could be used to rebate all the 28 % import duty on components that are valued at R 45, should the holder of these IRCCs decide to import components.

The 1999 review gave a new form of assistance to carmakers in the form of the Productive Asset Allowance (PAA), where an investor of a qualifying project would generate IRCCs equal to 20 percent of the value of the investment, spread over five years. This means that if an investor invested R 100 million in a qualifying project, R 20 million worth of IRCCs would be generated. These IRCCs could be used to rebate import duty equal to R 20 million of automotive imports, over five years.

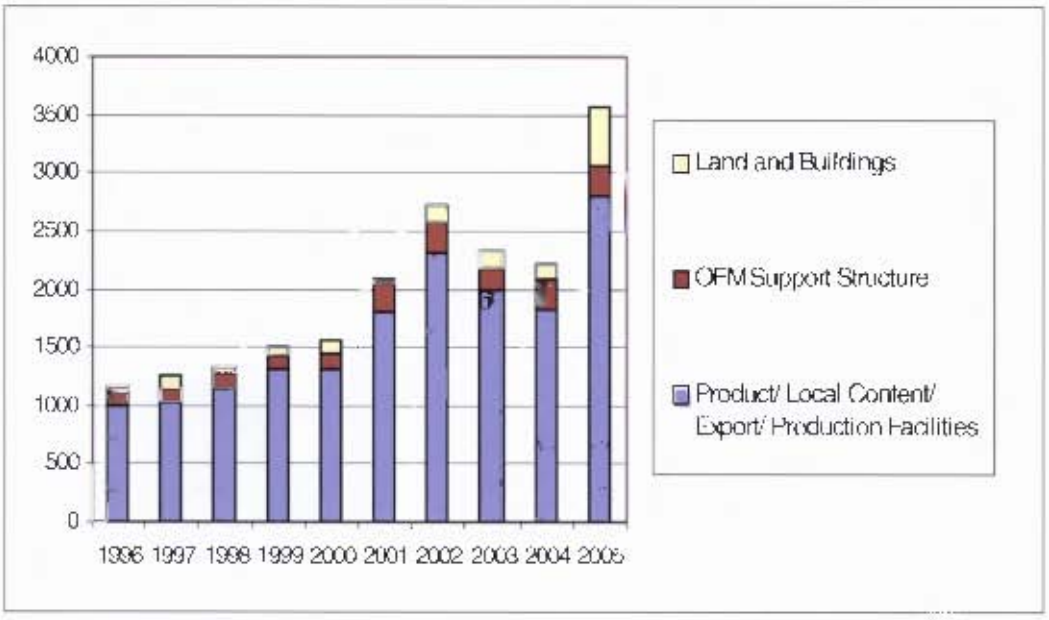
4. CURRENT DEVELOPMENTS IN THE SOUTH AFRICAN AUTOMOTIVE INDUSTRY

4.1 Investment, Ownership and Restructuring

The early stages of the MIDP saw Multinational Corporation (MNC) carmakers moving in to acquire ownership of the domestic assemblers, which were previously licensed to produce their products. MNC first tier suppliers followed by acquiring ownership of some domestic suppliers, mainly through the establishment of subsidiaries and joint ventures (Barnes, Kaplinsky and Morris, 2004). The change in ownership was swiftly followed by a surge in investment, by both assemblers and component manufacturers, mainly to expand capacity and modernise plants for exports programmes (Black, 2001; Barnes and Kaplinsky, 2000b). The growth in investment in the sector can be observed in Figure 1. As can be seen in the figure, most of the total investment and new investment has been in the production activities of the industry, which also involves increasing local content.

Under foreign ownership, the industry has mostly restructured and rationalised vehicle production. There has been an improvement in vehicle manufacturing in terms of model production volumes and in economies of scale. Industry statistics show a drop in the number of models manufactured. The reduction in the number of models produced can be observed in Figure 2, which shows a reduction in the number of models produced by 43 percent, from 21 to 12 models, between 1996 and 2005.

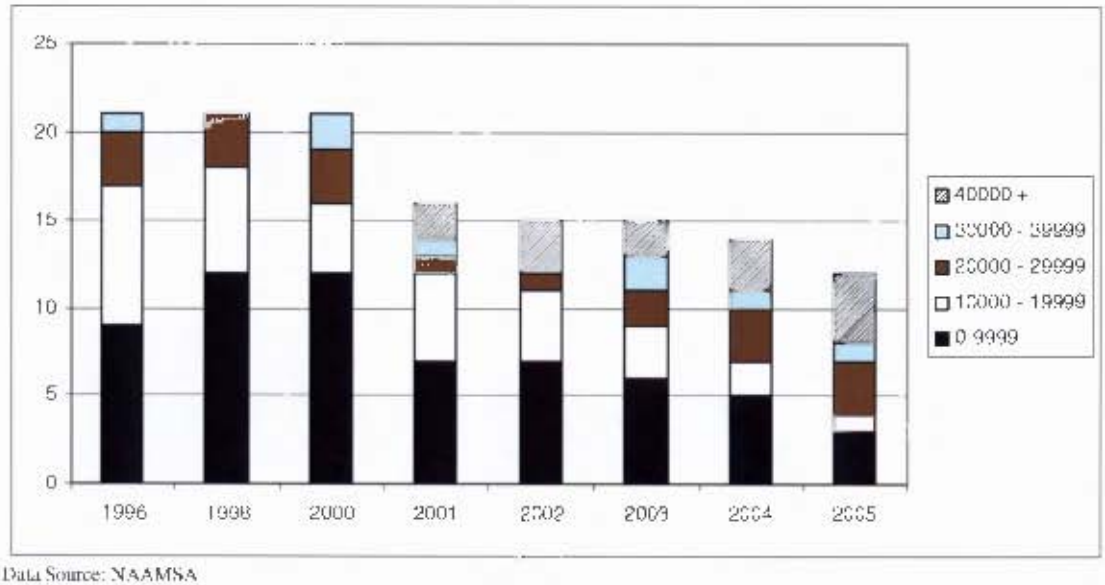
Figure 1. Investment in the Local Automotive Industry (R m)



Data Source: NAAMSA (2006)

The production of low volume models, such as the 0-19 999 range, has declined, while certain models are now produced in volumes of over 40 000 units. Figure 2 shows that in 1998 the total number of models manufactured was 21, of which 12 were in the 0-9999 volume range, 6 in the 10 000-19 999 range and 3 in the 20 000-29 999 range. In 2005, only 12 models were manufactured; 3 in the 0-9999 volume range, 1 in the 10 000-19 999 range, 3 in the range of 20 000-29 999, 1 in the 30 000-39 999 range and 4 in the + 40 000 range.

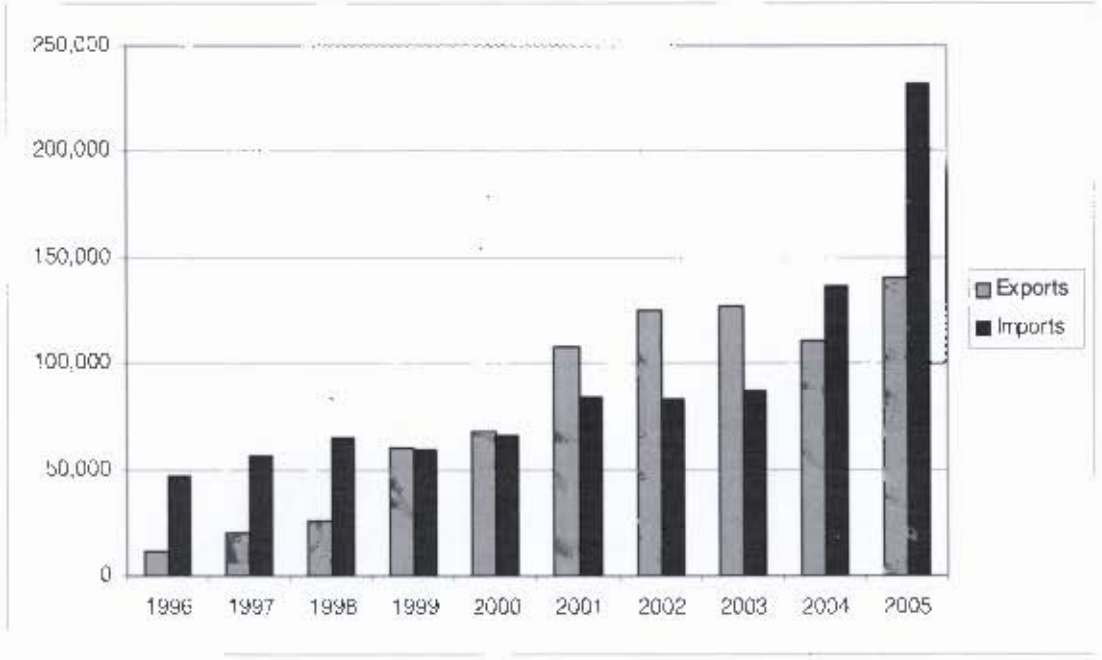
Figure 2: Volume Performance per Passenger Vehicle Models (no. of models)



Data Source: NAAMSA

This restructuring in vehicle production is also reflected by the growth in the trade of motor vehicles as shown in Figure 3. There has been a rapid increase in both export and import of vehicles between 1996 and 2005. Imports of motor vehicles have increased, as the low volume models that were previously produced are replaced by imports. Exports show a similar growth trend, although this growth seems to have slowed down since 2002.

Figure 3: Trade in Motor Vehicles (units)



Data Source: NAAMSA

All the above mentioned developments: the reduction in the number of manufactured vehicle models and the general increase in vehicle production due to the surge in exports and local demand should have led to gains in economies of scale and reduced production costs for carmakers. The production costs should have been reduced further by cheaper component imports, which are being discounted by the IRCCs.

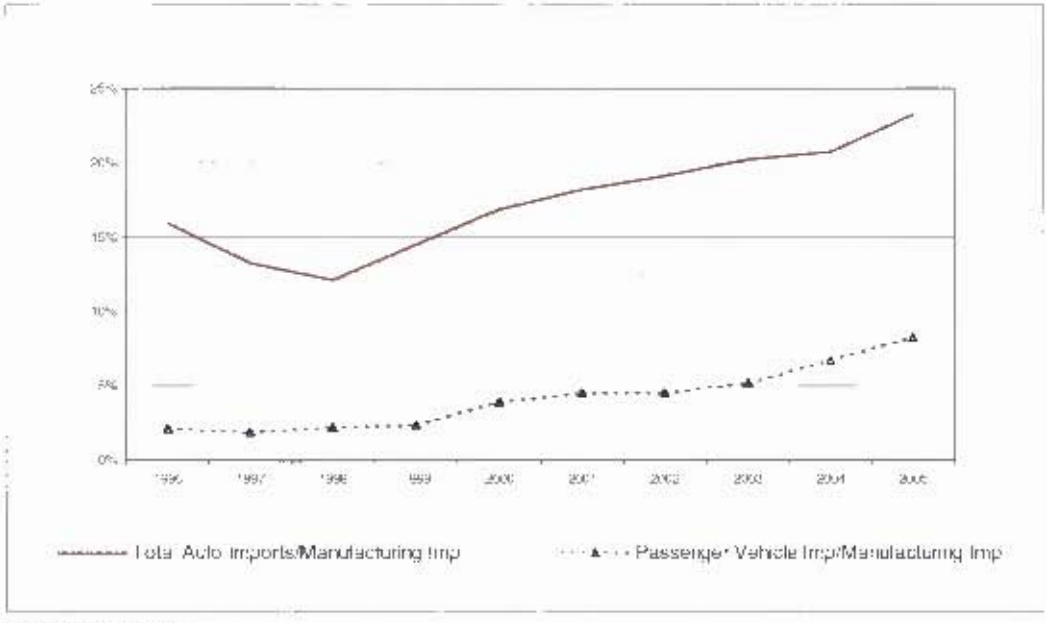
There has been no clear evidence that the carmakers are passing on these gains in costs to consumers through cheaper car prices (Flatters, 2005; Kaplan, 2005). It is particularly difficult to investigate the actual effect that the MIDP has had on motor vehicle prices. This is mainly because the car prices in South Africa have to be compared to the car prices in other countries. The results are very sensitive, in particular, to the exchange rates used. Final prices paid by the consumer are also influenced by dealer margins, excise duties and country specific taxes, which differ among countries. When Barnes, Morris and Kaplinsky (2004), attempted to control for these factors, they came to the conclusion that there is no evidence

that suggests that the MIDP has raised car prices in South Africa above those in other countries (UK and Europe) for the same models.

4.2 Import Penetration

One of the main objectives of the MIDP, as stated in section 3, was to improve the automotive industry's trade balance. In the short term, imports were expected to rise, as component imports were required for the production of vehicles for the export programmes, and vehicle imports were also expected to rise, as carmakers needed to maintain market share. As predicted, growth in import penetration in the industry did occur as shown in Figure 4.

Figure 4: Import Penetration in the South African Automotive Industry



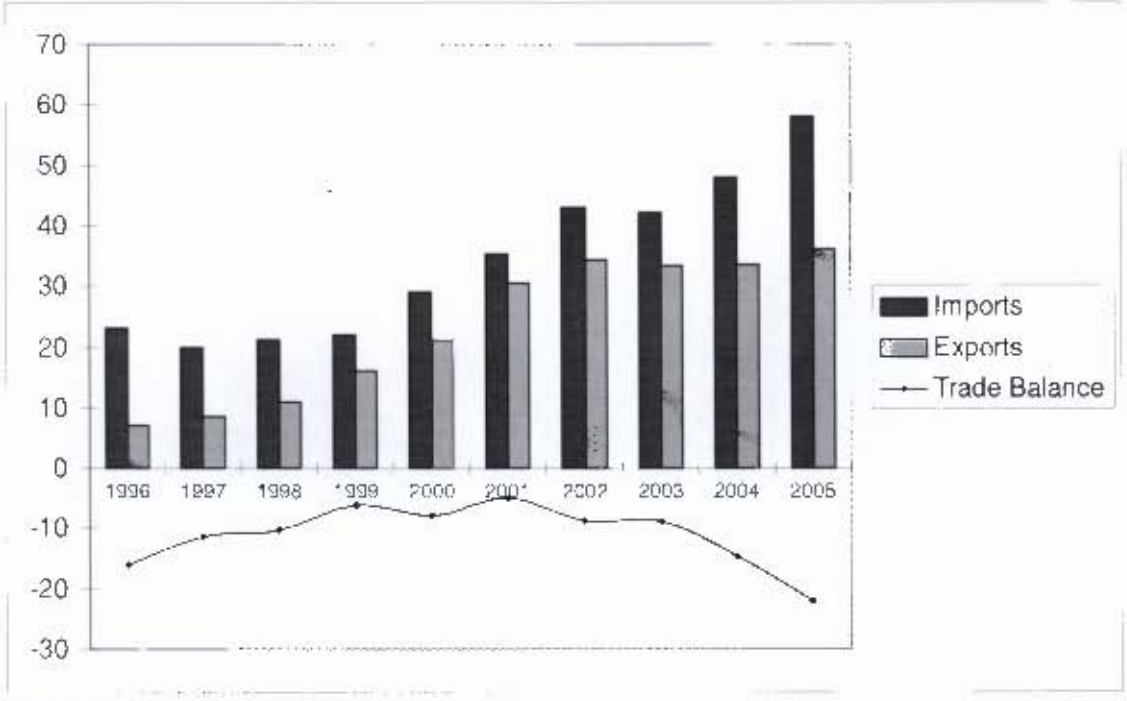
Data Source: TIPS data

As can be seen in Figure 5, the trade balance of the automotive industry did improve between 1996 and 2001, but has deteriorated since. More recently there has been an extraordinary increase in imports, while export growth slowed, resulting in a record nominal automotive trade deficit of R27, 7 billion in 2005. This deficit, given the pressure on the Rand by the overall national trade deficit at approximately 6 % to GDP in 2005, has serious inflationary implications.

A major cause of this deterioration in the automotive trade deficit is the unexpected surge in motor vehicle imports, although they contributed a relatively smaller percentage of 19.8

percent to the automotive trade deficit in 2005. This rapid increase in vehicle imports, between 2003 and 2005 can be clearly observed from Figure 3 above.

Figure 5: Automotive Trade Balance (2000 constant prices, in billion Rands)



Data Source: TIPS and Stats SA for inflation rates

A combination of factors is behind this appetite for vehicle imports. The current expansion in local demand, the lower effective cost of vehicle imports given the reduction in tariffs and the ability to rebate import duty using IRCCs, together with underinvestment by carmakers seem to be the main factors.

The increase in import penetration by foreign components would lead to a reduction in the levels of local content in both locally manufactured components and vehicles if it is occurring at a faster pace than the increase in domestic automotive production.

4.3 The Level of Local Content

4.3.1 Declining Effective Rates of Protection for Local Suppliers

A major development under the MIDP has been a reduction in the effective rates of protection for the domestic component industry (Black and Mitchell, 2002; Barnes and Black, 2003; Flatters, 2005). This seems to have contributed to the surge in component imports, shown in Figure 4 above.

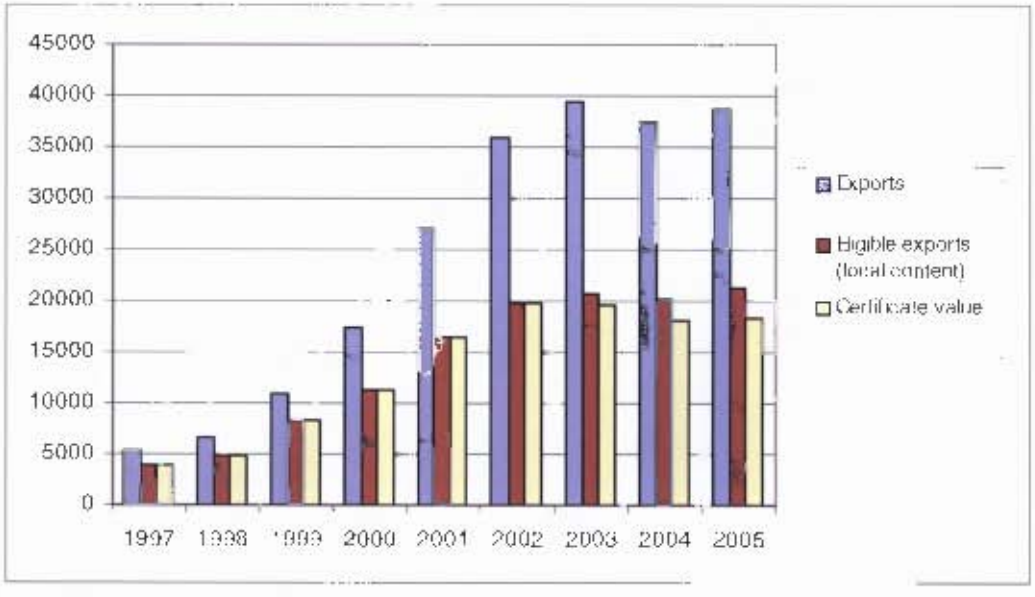
The following two factors seem to be behind this perceived decline in protection for the local components manufacturers:

- The reduction in tariffs on component imports to 30% in 2002, and the further reductions as shown in Table 2 above.

- The Import-export complementation (IEC) scheme that enables the industry to import components essentially duty free using IRCCs.

The combination of these two factors means that imports are becoming cheaper, as tariffs on components phase down and as the current growth in vehicle and component exports is enabling the carmakers to generate greater amounts of IRCCs, which can be used to import the components. As shown in Figure 6, the value of IRCCs generated by exporting increased dramatically since 1997, but has declined recently because export growth has slowed since 2002 (shown in Figures 3 and 5, above). The value of eligible exports has also declined in line with the reduction in the value of credits earned in relation to exports (as shown in Table 2, column 4).

Figure 6: Value of IRCCs Generated by Exporting (R m)



Source: Black and Bhamjee (2006)

Catalytic converters, the leading component export products, use platinum group metals (PGMs) intensively as inputs. The gradual reduction in the valuation of these metals used in

catalytic converters, for IRCC calculation purposes, reduces local content in these products and would, therefore, also have the effect of reducing the value of IRCCs generated by catalytic converter exports.

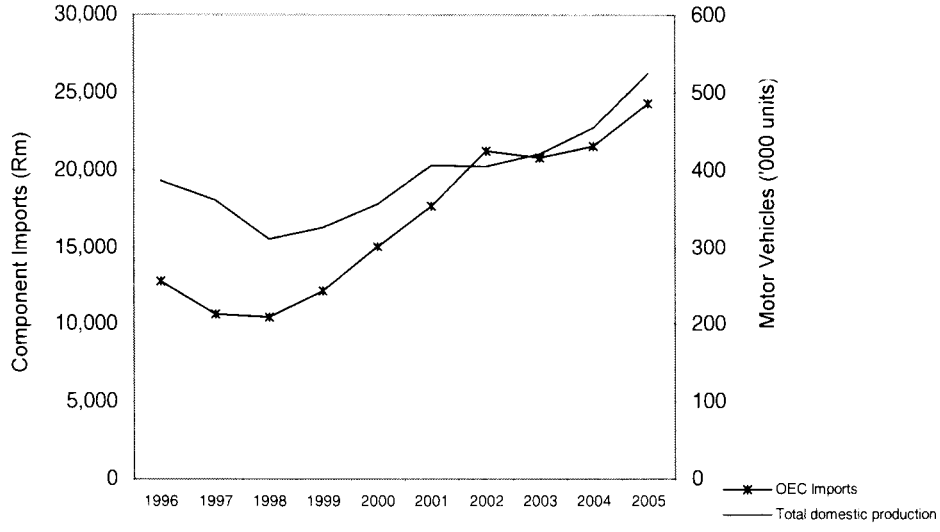
These lower levels of effective protection would discourage investment in the local component industry, which is needed for increasing the levels of local content in domestically manufactured vehicles. The Productive Asset Allowance (PAA), which is given to carmakers, could go a long way in attracting investment into the component industry. In its current form the PAA has been criticised for not encouraging investment in the component industry (Barnes and Black, 2003). The main problem is that for a project to qualify it needs to be linked to an OEM rationalisation project. This would, therefore, exclude many useful investment projects by carmakers, which could be targeting improvements in local content in components.

4.3.2 Introduction of New Vehicle Models

The pre-MIDP automobile industry included the production of vehicle models that were a couple of generations old by world's standards (Black, 2001). In order to have successful export programmes, producers had to introduce new models of superior quality and technological standards, suitable for exporting to the markets of the developed nations. Another benefit for the carmakers of these new models is that production costs could be reduced substantially through component and platform sharing among vehicle models. This was not possible on the old models, where in most cases every model had its own specific parts.

These new models would require state of the art components, which are likely to be imported. The high correlation in vehicle production and component imports (Figure 7 below) seems to confirm this argument. As can be seen in Figure 7, the increase in component imports has been faster that the increase in vehicle production, suggesting decreasing levels of local content in these new vehicle models produced in South Africa. This would be disappointing to policy makers as the demand for these new components was expected to be satisfied by the (recent technologically upgraded) domestic subsidiaries and joint venture tier one firms.

Figure 7: Motor Vehicle Production (units) and Component Imports (2000 prices)



Data Source: NAAMSA (2005) and Stats SA for inflation rates

The production of some of these old models, such as the VW Citi Golf[8], has not been phased out completely, as these models are still popular in the domestic market. Phasing out the production of these old models at a slower pace could be crucial for some local suppliers in the short run, as revenue is required for the upgrading of plants, in order to compete with the component imports before protection is reduced further.

4.3.3 Sourcing of Component Subsystems

The sourcing of component subsystems by carmakers has important implications for component firms in the developing countries. Before subsystem sourcing, carmakers used to source individual, standardised components from a large number of suppliers. These parts would then be kept as inventory until they were needed on the assembly line. The close proximity required under component subsystem sourcing, due to the bulky nature of these parts, means that most of their manufacturing and assembling needs to take place in the country where the vehicles are assembled. This should give the domestic suppliers, especially the subsidiaries and joint ventures of MNCs, an advantage over foreign suppliers. This would then raise local content levels in vehicles manufactured locally.

Such a positive effect on local content would not be significant if the MNC owned subsidiary suppliers are used by the carmakers to simply assemble parts manufactured in the developed

countries. These components are likely to be imported as ready to assemble packs for specific vehicle models.

The fact that these packs are likely to contain complete parts for specific models means that there would be very limited opportunities for local suppliers to contribute to the manufacturing of parts for the new car models. It could also be argued that the persistent trade deficit[9] in components, despite the current significant tariffs on components, is indicative of such a simple import-and–assemble strategy by the domestic carmakers and first tier suppliers. This strategy requires light investments and would be cost effective given the technology challenges of the domestic component industry.

It has been shown in this section, therefore, that the structure of the industry has been dramatically transformed by the MIDP. There has been a change in ownership, an increase in investment, and vehicle model rationalisation has taken place. The challenge remains on the imports side, with the deteriorating automotive trade deficit and no evidence of an increase in local content.

5. DATA AND METHODOLOGY

5.1 Local Content Measures

Various sources of data are used in this paper to map the levels and general trends in local content for the locally manufactured components and motor vehicles. Some local content measures try to capture all the value added created by the operations of the firms, which, aside from the local component purchases, would also include wages, administration costs and firm profits. Local content on a product would then be measured as the proportion of all the costs incurred locally and firm profits to the total wholesale price of the product. Some of the measures used in this dissertation are calculated differently. For example, in section 7 some measures consider local content only as local component purchases as a percentage of total component purchases by a firm. Such local content measures, therefore, do not take firm assembly costs and firm profits as local content. All these measures as would be discussed in section 7 are subject to the deviations of the exchange rate.

[8] The VW Citi Golf was the 4th top selling car in 2003 (DTI, 2004).

5.2 The Datasets

In section 6 of this dissertation a dataset of component firms from the South African Automotive Benchmarking Club (SAABC) is used to assess local content in component products manufactured in the country. The Club has a membership of 70 firms. Sixteen firms, of the 62 firms that were in our data, that also supply the aftermarket were excluded from the analysis, leaving 46 firms in the sample. Information on these firms is available from 2000 to 2005. The shortcoming of this data is that there is a potential sample bias, where the fact that these firms have chosen to be benchmarked might be correlated with some of their firm characteristics, which are different from those of firms that chose not to be benchmarked. Hopefully, such firm differences do not have any influence on local content. The 46 firms do not represent the whole component industry, but this dataset is the best available source of independently benchmarked automotive component firm data in South Africa.

Section 7 uses various measures of local content, sourced from different industry institutions. Export data from the International Trade Administration Commission (ITAC), which manages the IEC component of the MIDP is used to measure local content on exported vehicles and components. Other measures, from the Department of Trade and Industry (DTI), National Association of Automobile Manufacturers of South Africa (NAAMSA) and the National Association of Automotive Component and Allied Manufacturers (NAACAM), are also used.

6. COMPONENT FIRMS AND LOCAL CONTENT

6.1 The Levels of Local Content in Components

The average level of local content[10] in the products of the 46 component manufacturing firms in the sample has been very stable, ranging only between 53 and 56 percent over the last six years as can be seen from Figure 8 below. Such stability is rather surprising given the import penetration in the automotive industry observed earlier in section 4.2 of this dissertation. Even the currency, which was very volatile between 1999 and 2002, does not seem to have had any effect on the sourcing behaviour of these component firms.

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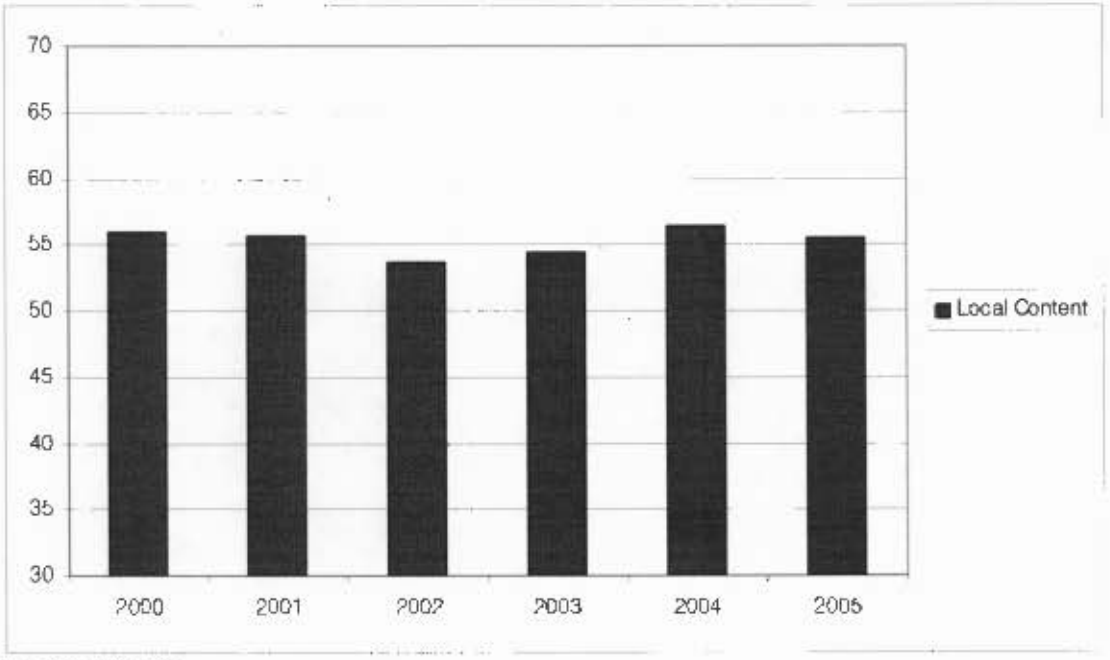
[9] See the trade balance of components for 2003-2004 in Table A.3 in Appendix A.

This stability of local content could be due to statistical issues where the firms in the sample are too diverse, in terms of ownership, market focus and size. The local content trends for these different groups could be in opposite directions, resulting in the apparent average stability. The effect on local content of firm ownership, tier status and the target market for the firms is investigated in the next subsections.

Figure 8: Average Levels of Local Content in the Firms' Components (%)



Data Source: SAABC

6.1.1 Firm Ownership and Local Content

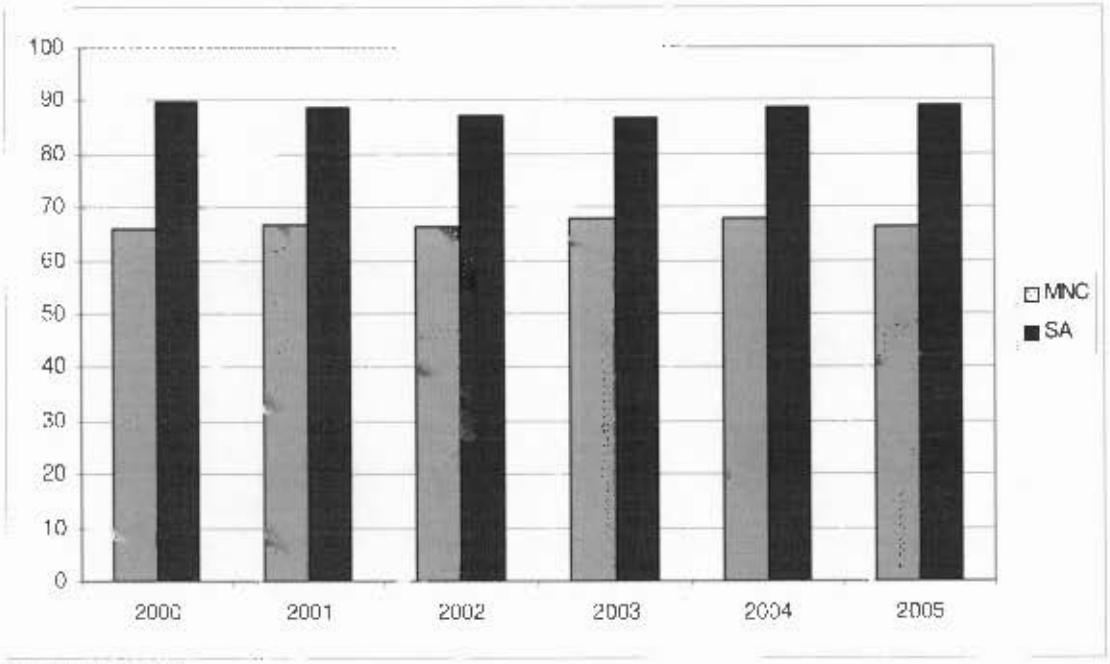
It is apparent from Figure 9 below, that firm ownership does have an effect on the level of local content in the products of the different component firms. MNC owned firms have lower levels of local content relative to the locally owned firms.

One limitation of the data is that the firm ownership given to the firms for all the years is their year 2005 ownership. A firm that was initially domestically owned but was later acquired by foreign owners would be registered as has been MNC owned for all the years. It is therefore possible that some of the firms from the MNC group were South African owned for many of the years before 2005. The local content levels of the MNC firms for the years before 2005 should, therefore, be biased upwards as it includes a number of firms that were domestically owned by then, which would on average have higher local content.

[10] The annual local content values for the firms have been weighted by their 2005 total revenue values in all the analysis in this section.

Local content for the MNC firms seems to have picked up rather slightly from 2000 to 2003, but dropped slightly afterwards. The local content levels of the locally owned firms dropped slightly from 2000 to 2003, but picked up slightly afterwards to their original levels by 2005.

Figure 9: Local Content by Firm Ownership (%)



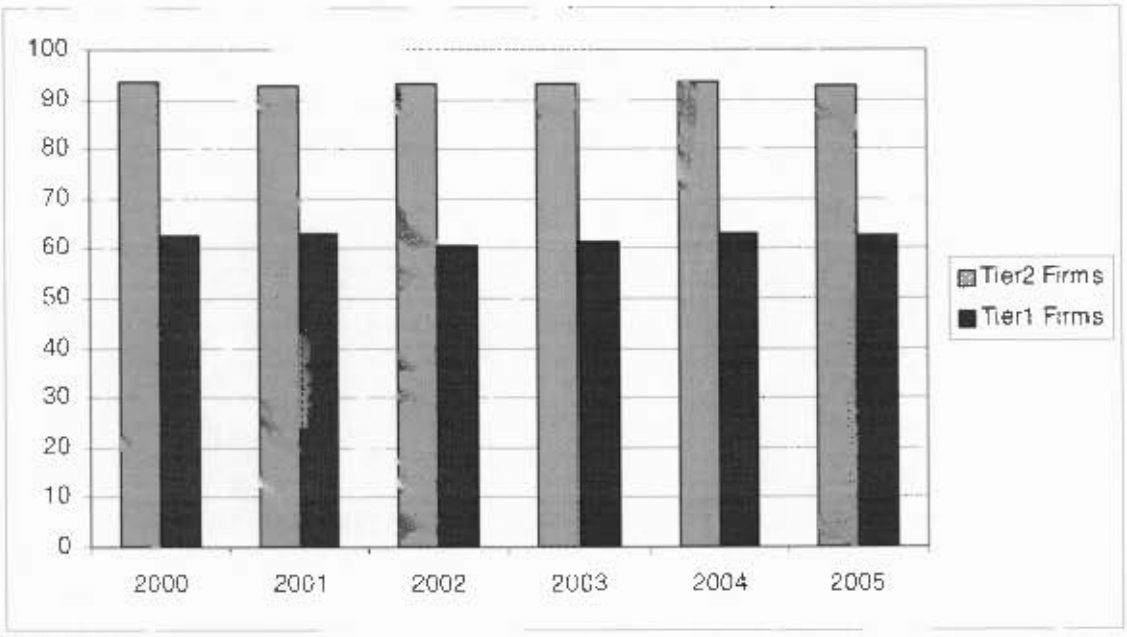
Data Source: SAABC

The MNC owned firms should have relatively stronger operational relations with the carmakers and should, therefore, be expected to undertake some of their component import assembling activities. This would, therefore, result in lower levels of local content in the products of the MNC owned component firms. The firm data also show that the MNC owned firms are bigger in terms of sales revenue (average sales revenue for South African owned firms is equal to 55 % of the MNC firms' average sales revenue) and are less labour intensive, suggesting a higher level of automation by the MNC firms. The lower levels of local content by the MNC owned firms mean that they are doing relatively less component manufacturing in South Africa compared to the locally owned firms. This is unfortunate, as it should be expected that production by a foreign owned firm would have important spillover effects to the industry, due mainly to their expected superior technology and management skills. Global experience does, however, show mixed results on the existence of technology spillovers by MNCs to local industries (Gachino, 2006; Subash, 2006; Bellak, 2004).

6.1.2 Market Focus and Local Content

It should be expected that the local content levels in the firm's products would also be influenced by the type of products that these firms are manufacturing. The products produced by tier one firms are likely to be vastly different from those produced by tier two[11] firms. As shown in Figure 10 below, tier two firms have very high local content levels in their products, averaging 90 percent, which is much higher than that of tier one firms, which averaged around 60 percent over the six year period.

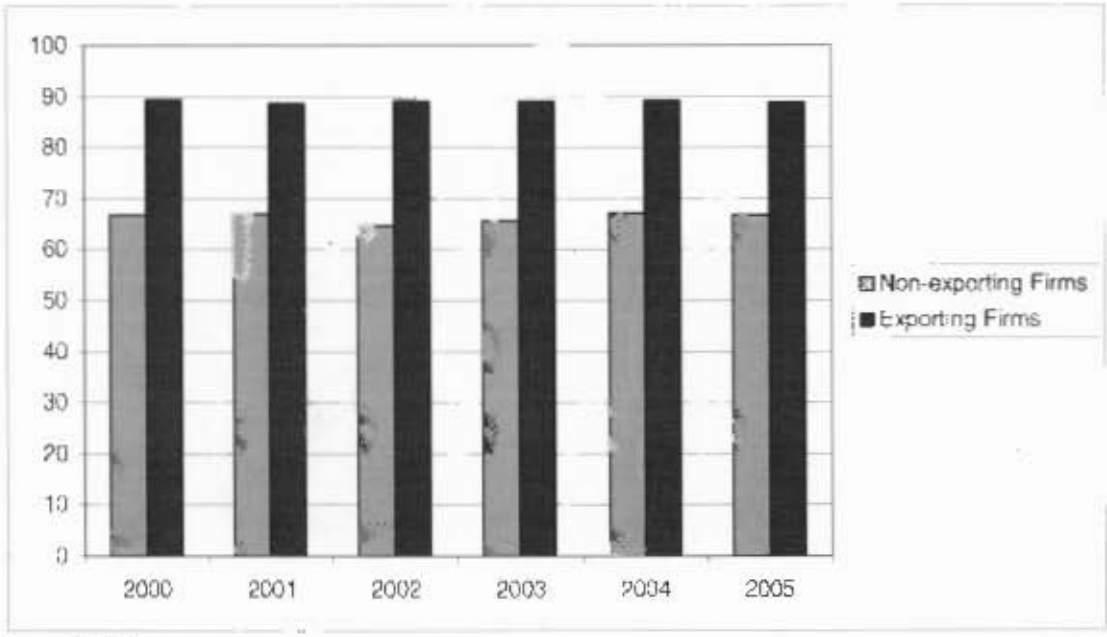
Figure 10: Local Content by Firm Market Focus: Tier 1 and Tier 2 firms



Source: SAABC

The higher local content of the tier two firms could be due to the fact that their products are raw material based and relatively simpler and would, therefore, have higher local inputs. Some of the tier one firms should also be involved in major just-in-time assembling operations of component imports for the carmakers, which would then result in the lower levels of local content. A market orientation difference that should also have some significance in the local content of these firms is the export market compared to the local market. As can be seen in Figure 11, exporting firms have relatively higher local content compared to non-exporting firms.

Figure 11: Local Content by Firm Market Focus: Exporters and Non-exporters



Source: SAABC

6.2 Local Content Regression Models

The regression models constructed in this section also show that firm ownership and market focus have an effect on the local content levels of the firms' products. The average local content values for the six year period for the firms were regressed against a set of independent variables. These firm specific independent variables are as follows: MNC (firm ownership dummy variable), Tier 1 (firm tier status dummy variable), Employment, Turnover (sales revenue) and Exports (percent of the finished goods exported by a firm). The regression equation is as follows:

$$LC_i = b_0 + b_1MNC_i + b_2Tier1_i + b_3Employmeny_i + b_4Turnover_i + b_5Exports_i$$

Where: MNC_i = 1 if a firm is MNC owned and
= 0 if a firm is locally owned

$Tier1_i$ = 1 if a firm status is Tier 1 and
= 0 if a firm's status is Tier 2

[1] Tier 2 firms are defined in this section as those components manufacturing firms that supply their products only to other components manufacturing firms. Tier 1 firms are firms that supply their products exclusively to carmakers.

The results are shown in Table A.4 of the Appendix. As can be seen on the table, most of the independent variables are highly insignificant, although their coefficient signs are consistent with the analysis in Figures 9 to 11 above. Only firm ownership is significant at the 5 percent level of significance. Of the insignificant variables, Tier 1 is the most significant, but only at the 32 percent level of significance. The insignificance of these variables could be caused by multicollinearity, which occurs when most of the independent variables are related or correlated with each other. This correlation is very likely in our analyses because, for example, Tier 1 firms are likely to be MNC owned with a higher turnover, employment and exports. In Table 3 below the highly insignificant variables were taken out of the model, with MNC and Tier 1 firm being the only independent variables left in the regression equation.

The results show that the model improved as these two independent variables explain 36 percent of variation in the firms' local content, which is an improvement from the 33 percent explained variation by the original five variables. This is shown by the Adjusted R-squareds in Table 3 below and Table A.4 of the Appendix.

The significance of the whole model also improved as the F-statistic increased to 14, from 5.6 in the previous model of five independent variables. The tier status dummy variable, Tier 1, improved its significance by a big margin from being significant only at the 31.8 level of significance to the 18.7 percent level of significance.

Table 3: Least Squared Regression Results for Local Content Levels

Dependent Variable: Local Content			
Independent Variable	Beta Coefficient	T-statistics	P-level
Constant	90.4	10.0	0.0
MNC	-35.2	-4.5	0.0
Tier One	-13.7	-1.3	0.18
Adjusted R-squared	0.3	F statistic	13.9
Durbin-Watson stat.	1.8	P-level	0.0

The coefficients of these two variables (in Table 3) show that the average local content of an MNC owned firm would be 35.2 percent lower than that of a locally owned firm and the average local content of a tier one firm would be 13.7 percent lower than that of a firm that suppliers other component firms (tier 2 firm). Firm ownership, therefore, seems to be a decisive factor in levels of local content for these component firms.

The model results in Table 3 then show that a firm that is MNC owned and supplies its products exclusively to carmakers (tier one) would have an average local content of 41.4%

(90.4% - 35.2% – 13.7%). These statistical results are consistent with the results that were presented in Figures 9 to 11 above.

6.3 Changes in the Firms' Levels of Local Content

The dynamic results show very interesting developments. The firms in the data set were separated into two groups, a group made up of firms that have increased local content and a group that has reduced or not changed it over the six year period. The features of the firms in the two groups are presented in Table 4 below.

6.3.1 Descriptive Statistics

A slight majority (51.8%) of the firms in the group that have improved their levels of local content are MNC owned. In comparison, a landslide majority (70.5%) of the firms that have reduced local content are South African owned. This is consistent with what happened between 2000 and 2003 in Figure 9 above, where MNC owned firms increased local content and locally owned firms decreased it, rather slightly. The firms' relations with carmakers seem to have had an effect on the changes in local content as the majority of the firms that have changed local content are Tier 1 firms, 69% of the positive growers and 59 % of the negative local content growers.

Table 4: Firm Features of Firms that Changed Local Content

Firm Group	SA Owned/Total Firms in the group	Tier 1 Firms/Total Firms in the group	Mean Firm Turnover (R m)	Mean Labour Force Size
LC growth rate > 0	48.2%	69%	177.2	260.3
LC growth rate ≤ 0	70.5%	59%	206.3	308.4

It, therefore, seems that the South African owned Tier 1 firms have reacted to globalisation by increasing the import content in their products. MNC owned Tier 1 firms seem to have begun forming relationships with domestic suppliers and have increased their local sourcing.

6.3.2 Regression Results

Regressions were also performed to see if the above mentioned developments could be supported statistically. The local content growth rates of the firms (LC Growth Rate) were regressed with two independent variables, the firm ownership (MNC) and the tier status of the firms (Tier 1). The aim of this was to establish whether firm ownership and the tier status of

the firms have any influence on whether the firms changed their local content in the last six years, as suggested by the results in Table 4. The results are shown in Table 5 below.

Table 5: Least Squared Regression Results for Local Content Growth Rates

Dependent Variable: LC Growth Rates			
Independent Variable	Coefficient	T-Statistic	P-levels
C	-0.04	-0.2	0.8
Tier 1	-0.2	-1.0	0.3
MNC	0.2	1.0	0.2
Adjusted R-squared	-0.006	F-statistic	0.8
Durbin-Watson stat	1.9	P-level (F-stat)	0.4

As can be seen, both independent variables are highly insignificant meaning that there is no statistical evidence to suggest that firm ownership and the firm tier status have any influence on the firms' local content growth rates. The whole model is also highly insignificant as shown by the small value of the F-statistics and its p-level that is higher than 0.05. The Adjusted R-squared also shows negative explained variation by the two variables, which is very unusual.

The principal reason for these bad results is probably the fact that the local content for the firms is very stable as shown earlier in Figures 9 to Figure 11 above. The regression model above, therefore, is forcing the two independent variables to explain variation in the local content growth rates of the firms, when in actual fact the growth rates in the firms' local content levels are extremely small and insignificant.

It was shown in this section, therefore, that firm ownership has a significant effect on the local content levels for the component firms' products. Foreign ownership tends to reduce local content. It is very likely that it is rather the characteristics of the foreign firms that really influence local content. For example, foreign owned component firms are likely to be larger tier one firms that undertake considerable component import assembling activities of the carmakers. Analysis by SAABC, with a higher number of suppliers (70 firms) from the same database, also show that MNC owned suppliers have significantly lower local content (SAABC, 2006). It was also shown that these MNC owned firms were more profitable and operationally competitive than their locally owned counterparts, although the locally owned firms were improving the same variables at a faster pace. The domestically owned firms were also shown to spend more on research and development compared to the MNC owned firms.

7. CARMAKERS AND LOCAL CONTENT

This section investigates local content levels in vehicles manufactured in South Africa. This is done mainly by measuring local content in exported vehicles. Local content in locally manufactured vehicles is also, indirectly, measured by using different industry measures of local content in the carmakers' component purchases.

It was shown in section 4 that the industry has restructured production and this has resulted in increased model specialisation (shown in Figure 2). This restructuring was expected to increase component demand by carmakers. The surge in investment in the domestic component industry was expected to improve the supply side, in terms of capacity and technology standards. The combination of these factors should improve local sourcing by carmakers and improve levels of local content in locally manufactured vehicles.

7.1 Automotive Exports and Local Content

This section uses export data to measure local content in vehicles manufactured in South Africa. The export data is collected by ITAC for the IEC scheme of the MIDP. The South African automobile industry is increasingly outward orientated and levels of local content in exports should, therefore, give a fairly representative picture of the whole industry. The level of local content in exported motor vehicles is shown in Table 6. A striking observation is the low level of local content on the three different types of vehicles.

Table 6: Local Content in Vehicle Exports (%)

Motor Vehicle Type	1997	1998	2000	2001	2002	2003	2004	2005	2006 Jan-Jun
PASSENGER VEHICLES	50	49	42	38	39	35	36	37	39
LIGHT COMMERCIAL VEHICLES	51	50	n.a.	n.a.	n.a.	39	36	35	28
MEDIUM & HEAVY COMMERCIAL VEHICLES	45	50	n.a.	n.a.	n.a.	42	39	39	42

Source: ITAC

n.a. where data not available

A substantial decrease in local content on the exported vehicles has been experienced over the years, especially in passenger vehicles and light commercial vehicles. For light commercial vehicles, the levels of local content have dropped from 51 % in 1997 to 35 % in 2005, and have dropped from 50 % to 37 % for passenger vehicles in the same period. The local content measure on exported vehicles used in Table 6 is very sensitive to the export price of vehicles,

as it is measured as wholesale price of a vehicle less the value of component imports. The strong rand would, therefore, reduce profits on export contracts and this would show as a decrease in local content. The big drop in this measure between 1998 and 2003 would also reflects the change in the type of vehicle models manufactured, and the sourcing of their components. The levels of local content on the exported vehicles is lower than local content on vehicles aimed at the domestic market, due to a degree of adaptation required for local conditions.

The type of components that are exported in South Africa suggest a very interesting export and import strategy by the industry. The exported components are mostly basic and peripheral in nature, as observed in Table 7 below[12], and have very high levels of local content. It should also be noted that not all the exported components are basic in nature. High-tech components, such as engine and engine parts and electrical equipments are also among the leading exported products by the domestic component sector, as shown in Table 7. Nevertheless, the generally peripheral nature, together with the export focus of most of these components appears to partly explain the low levels of local content in the domestically manufactured vehicles.

Table 7: Local Content in Component Exports (%)

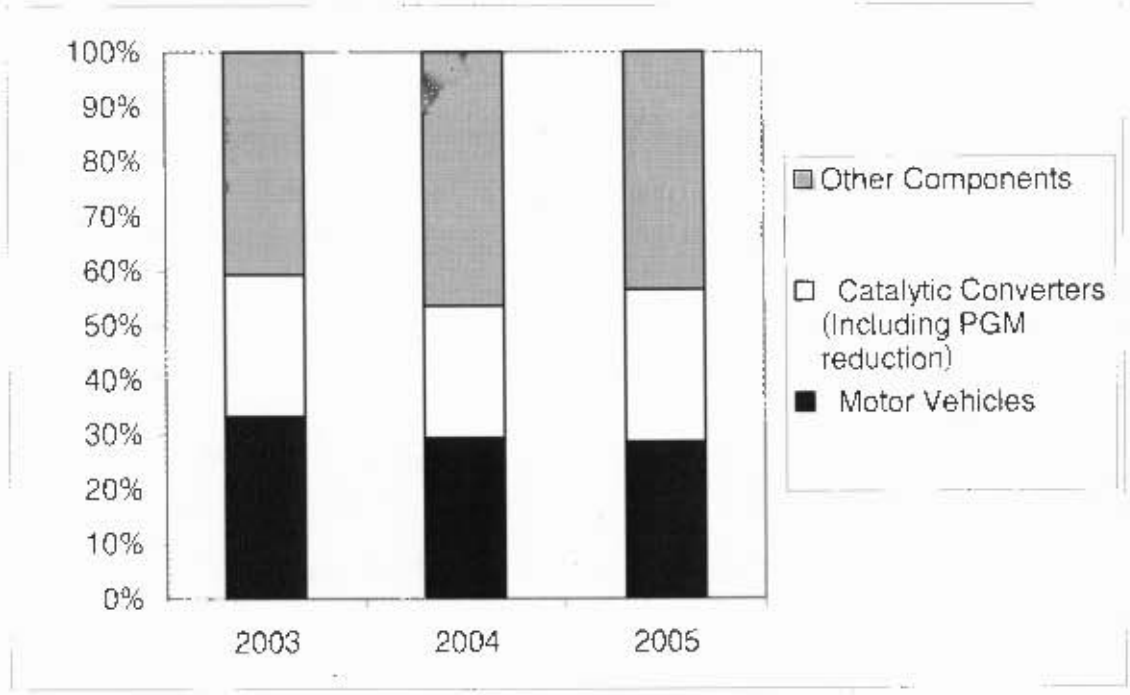
Component Type	2003	2004	2005	2006 Jan-Jun
CATALYTIC CONVERTERS (Including PGM reduction)[13]	81	82	61	57
SEATS AND COMPONENTS INCL LEATHER COVERS	77	78	79	74
ENGINES AND ENGINE PARTS	82	65	72	64
TYRES AND TUBES	67	65	68	63
WHEELS, BRAKES AND PARTS	89	89	87	86
BODY PARTS	79	72	76	76
ELECTRICAL EQUIPMENT	62	57	62	56
OTHER PARTS	72	72	80	79
SILENCERS & EXHAUST SYSTEMS	84	84	79	76
GLASS	75	78	89	78
SUSPENSION PARTS	84	79	70	69
RADIATORS	82	86	85	89
TOOLING	84	78	71	87
GEARBOXES, CLUTCHES & PARTS	73	74	75	71
CKD	97	50	84	91
AXLES: DRIVE & NON-DRIVE	69	74	71	70

Source: ITAC

[12] The generally peripheral nature of the locally manufactured components can also be observed in Tables A.1 and A.3 of the Appendix.

It seems that the exporting of these peripheral, high local content components is used by the industry to generate IRCCs in order to offset those lost by exporting the vehicles that have low levels of local content. It could then be argued that the exporting of these components has a direct negative effect on the local content in vehicles. As can be seen in Figure 12 below, component exports (catalytic converters plus other components) were the main contributors to the value of IRCCs generated between 2003 and 2005. The manufacturing of these basic component exports would not require the large investment commitments that are needed to increase local content in motor vehicles, and would therefore be the preferred IRCC generating strategies of the carmakers.

Figure 12: Automotive Products' IRCC Contributions



Data Source: ITAC

In a normal environment, one would expect exports to have lower local content than products aimed at the domestic market, as the latter would normally require some level of adaptation and redesign to meet local needs (Belderbos, Capannelli and Fukao 2001)[14]. This is not the case in the domestic component sector (as shown in Section 6.1.2), as exported components have higher levels of local content compared to components aimed at the domestic market.

[13] Catalytic converters use platinum group metals (PGMs) as inputs. The reduction in local content in catalytic converters is due mainly to the gradual reduction in the valuation of these metals used in catalytic converters, for IRCC calculation purposes.

[14] See Belderbos, Capannelli and Fukao (2001) for an analysis of local content dynamics of Japanese electronic manufacturers in 24 countries.

This is indicative of the raw material nature and the export-focus of the components manufactured by the domestic industry.

The relatively low levels of technology in these raw material intensive components, such as catalytic converters, tyres and tubes, glass and leather seat covers reflects the generally low levels of investment by both OEMs and component manufacturing firms in 'real' component manufacturing in South Africa. The industry's argument is that the low demand and the associated lack of economies of scale do not justify the higher investments required for 'real' component manufacturing. A potential solution to the limits posed by the small domestic market would be to increase volumes of these higher value components through exports (Black and Bhanisi, 2006). This would be a challenge for the local subsidiaries and joint ventures component firms, as this would mean direct competition with the parent companies in the foreign markets. This could even jeopardise their local position, as the ability to sell to the locally based OEMs is directly linked to the relationships between the OEMs and their parent companies[15].

As discussed in section 2, these low levels of investment, low levels of R and D activities, low technological development and low local content, which are the characteristics of the domestic component industry, are not unique to South Africa. They are a developing country phenomenon, given the global trends of follow sourcing and follow design. The challenges facing the component manufacturers in South Africa are exacerbated by the shortcomings in the national innovation system. These shortcomings, such as the shortage of skilled engineering personnel and the weakness of industry testing institutions, are general threats to the whole domestic manufacturing sector in South Africa (Roberts, 2006; Barnes and Lorentzen, 2004).

Despite these challenges, there is some evidence that the MIDP is inducing some technological development, involving upgrading, learning and innovation among certain locally based component firms (Barnes and Lorentzen, 2004). These developments were also shown to be from a few exceptional firms in the industry, and their performance with regards to these technological developments was also shown to match that of average firms in the same fields in the advanced global industries.

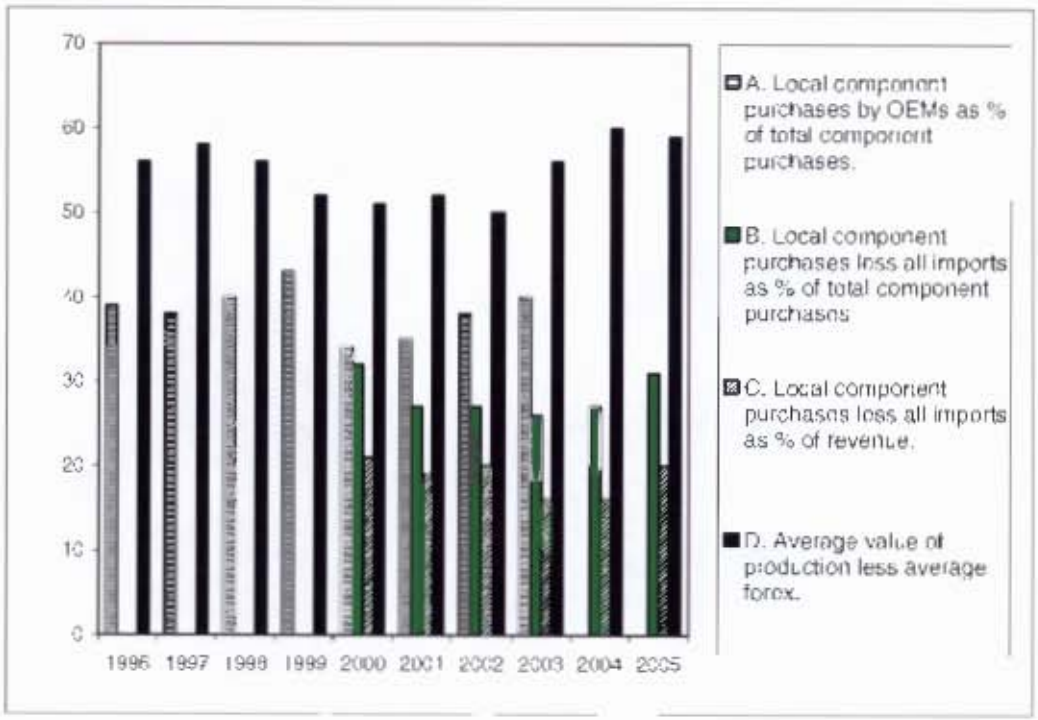
This export-import strategy of the OEMs has, therefore, created a disconnection between domestic component manufacturing and domestic vehicle assembly. The peripheral

components manufactured are mostly exported, while components used in the domestic vehicle assembly are mostly imported, resulting in the low levels of local content in vehicles, as shown in Table 6. This is unfortunate, as the current improvement in production volumes per vehicle model would then not increase economies of scale in the domestic component industry and reduces component and car prices as expected by policy makers.

7.2 Component Purchases by Carmakers

This section measures local content on the component purchases of the locally based carmakers using different measures compiled by industry institutions. The expectation, given the finding in the previous section of low local content on exported vehicles, is that carmakers' purchases would be low in local content. Most of these measures in Figure 13 below show low levels of local content, which range between 15 % and 60 %, on components purchased.

Figure 13: Industry's Local Content Measures (%)



Source: Black and Bhardsi (2006)

[15] See "Who is your daddy: Local subsidiaries and joint ventures profit from the activities of their parents", Financial Mail 15 September 2006.

Figure 13 shows that, in general, local content levels seem to have dropped slightly between 1997 and 2002, and have improved slightly since 2004. The main difference between these measures is the fact that some of them take assembly firm costs and firm profits into account while some exclude them entirely from their calculations. All these measures are also subject to the deviations of the exchange rate, with the measures that are based on revenue also deviating with firm profits.

Local content measures A and B are defined similarly, as they both measure local content only as component purchases and exclude assembly firm costs and firm profits. Local content measure A is derived from an annual firm survey by the DTI. This measure is biased upwards, as it also includes the import content in the local component purchases of the firms as local content. The difference in magnitude between the measures A and B is a reflection of this bias.

Local content measure C also measures local content only as component purchases (excludes the import content in these purchases), but as a percentage of firm revenue. The difference between measures B and C, therefore, would reflect the magnitude of assembly firm costs and firm profits. If assembly costs and firm profits were positive, then measure C would be biased downwards relative to measure B. This is the case in Figure 13. There seem to have been an increase in these assembly costs and firm profits between 2002 and 2004, judging by the relatively steep drop in measure C compared to B.

Local content measure D tries to measure local content by measuring the percentage of production costs in a vehicle that has been sourced locally. Firm assembly costs (not profits), would therefore, form part of local content, hence the relatively higher values of local content for this measure. This measure will also be influenced by the type of vehicle models manufactured. The old vehicle models, which were targeted to the domestic market, had higher local content, and the drop in this measure D between 1997 and 2002 could be a reflection of the phasing out of these models.

It has been shown in this section, therefore, that local content in motor vehicle remains low and seems to have decreased under the MIDP, to levels below 40%. As would be expected after this finding, local content in component purchases of the carmakers is also low as shown by the measures in Figure 13. This is in contrast to the high levels of local content on exported components (Table 7).

8. CONCLUSIONS AND POLICY RECOMMENDATIONS

The findings from sections 6 and 7 of this dissertation, although informed by the limited data, are that local content in vehicles has remained low. The rationalisation in model production, together with the growth in production volumes has not led to an increase in local content, as expected by policymakers. The increase in vehicle production in the domestic industry seems to be supported by an increase in component imports. The tier one firms, especially those that are foreign owned, appear to be intensively involved in the assembly of these imported components, hence the relatively lower levels of local content in their products compared to that of products manufactured by locally owned firms.

The generally raw material intensive, high local content components that are exported by the domestic component industry seem to be manufactured mainly for meeting IRCC needs, with the target being cost reduction in component and vehicle imports. It is apparent, therefore, that the strategy in the industry has been 'exporting in order to import', where the objective is to fight for market share of the local market (Black and Bhanisi, 2006). This is achieved by reducing import duty on vehicle imports and by reducing costs in the domestic vehicle assembly through cheaper component imports using IRCCs. This has raised the automotive trade deficit to very high levels.

As argued in sections 4 and 7, the effective rates of protection for the component industry are very low, and as a result, the carmakers and component manufacturing firms do not find it worthwhile to invest in the 'real' component manufacturing in South Africa. These low levels of protection, together with the relatively low production volumes per vehicle model and the low technology base of the domestic components industry make component imports very attractive.

It is apparent, therefore, that to survive in the long-run, the local component industry requires some form of protection and direct assistance, before tariffs are reduced further. In order to improve protection for component manufacturing, a slight change in policy could reduce the value of the IRCCs used to buy component imports. This could be done through further reductions in the ratios being used to convert exports to IRCC values (Table 2, column 4). This should eliminate the increasing cost disparities between imported components and locally manufactured components. This would also improve the rates of return on investments in real component manufacturing in South Africa. The PAA should also be extended to all component manufacturing related investments. It should be ensured that the extension of PAA to component manufacturers does not just increase production of the type of components that

are currently produced in the industry. The PAA could be used to encourage the production of higher value added components.

It is therefore difficult to see the MIDP's objective of increasing local content being achieved in the current shape of the programme given the above-mentioned IRCC generating strategies of the OEMs. However, it would also be premature to terminate the programme at the moment, even if the above mentioned interventions are not taken. This is because there are many current and expected changes in the market and the industry that might change the current strategies of the OEMs.

There are also serious long-term threats to the South African component industry that must be taken into account by policy makers. The South African industry has benefited mainly from the operations of the German-owned manufacturers, as a result of their low global capacity and higher production costs in Germany at the beginning of the MIDP. The integration of new EU members has provided low cost production sites, closer to the home market for the German-owned carmakers (German vehicle manufacturers already account for half of all the production in this region (VDA, 2007)). Given high transportation costs as result of its distance from European markets the South African industry would find it difficult to compete with firms based in these new EU states. The emergence of China and India as serious automotive players and the capacity they have built in a short space of time shows that they will be major exporters soon. Their comparative advantage due mainly to their low labour costs makes them major threats to the relatively labour intensive segments of the component sector.

Despite the current challenges to the domestic industry, all indications point to the fact that the domestic market is likely to grow faster than previously expected. It has been estimated that annual domestic sales close to a million vehicles could be achieved by 2010[16]. A significantly larger regional market also seems to be possible in a shorter period of time than previously expected, judging by the recent higher economic growth of the neighbouring Southern African Development Community (SADC) members. Should these expectations materialise, minimum efficient scales would be achieved by both component and carmakers, making the industry more competitive.

[16] See "Into Overdrive", in Financial Mail, 15 Sep 2006

References:

Barnes, J and Black, A (2003) Motor Industry Development Programme: Review Report, Department of Trade and Industry (DTI), Vol.24.

Barnes, J and Kaplinsky, R (2000a) Globalisation and trade policy reform: Whither the automobile component sector in South Africa, *Competition and Change*, Vol. 4, 211-243.

Barnes, J and Kaplinsky, R (2000b) Globalisation and the death of the local firm? The automobile component sector in South Africa, *Regional Studies*, Vol. 34. 9, 797-812.

Barnes, J and Kaplinsky, R and Morris, M (2004) Industrial Policy in Developing Economies: Developing Dynamic Comparative Advantage in the South African Automobile Sector, *Competition and Change*, Vol. 8, No. 2, 153-172.

Barnes, J and Lorentzen, J (2004) Learning, Upgrading and Innovation in the South African Automotive Industry, *European Journal of Development Research*, Vol. 16, No. 3, 465-498.

Belderbos, R, Capannelli, G and Fukao, K (2001) Backward Vertical Linkages of Foreign Manufacturing Affiliates: Evidence from Japanese Multinationals, *World Development*, Vol. 29, No. 1, 189-208

Bellak, C (2004) How Domestic and Foreign Firms Differ and Why does it Matter, Department of Economics Working Papers: Working Paper No. 87, Vienna Institute of Economics and B.A., Austria

Black, A (1994) An industrial strategy for the motor vehicle and component sector, University of Cape Town Press.

Black, A (2001) Globalisation and restructuring in the South African automotive industry, *Journal of International Development*, 13 (6), 779-796.

Black, A and Bhanisi, S (2006) Globalisation, imports and local content in the South African automotive industry. Paper presented at the Trade and Industrial Policy Strategies (TIPS) Annual Forum, Johannesburg

Black, A and Mitchell, S (2002) Policy in the South African Motor Industry: Goals, Incentives and Outcomes, *South African Journal of Economics*, Vol.70, No.8, 1273-1296.

Chotai, A (2007) Developments in Asian Auto Industry: Implications on Global Industry, Presentation to the South African Automotive Conference 2007, Johannesburg.

Corswant, F and Fredriksson, P (2002) Sourcing trends in the car Industry: A survey of car manufactures' and suppliers' strategies and relations, *International Journal of Operations and Production Management*, Vol. 22, No 7, 741-758.

Department of Trade and Industry (2004) Current deployments in the Automotive Industry, Pretoria, Department of Trade and Industry

Dicken, P (2002) *Global shift: Transforming the world economy*, London: Paul Chapman.

Duncan, D (1997) *We are Motor Men*, Scotland: Whittles Publishing.

Flatters, F (2005) The Economies of MIDP and the South African Motor Industry, Queen's University, Canada.

Financial Mail (2006) "Who's your Daddy", The Motor Industry Special Report (15 September 2006). Financial Mail.

Financial Mail (2006) "Into Overdrive", The Motor Industry Special Report (15 September 2006). Financial Mail.

Gachino, G (2006) Foreign Direct Investment, Firm-Level Capabilities and Human Capital Development: Evidence from Kenyan Manufacturing Industry, United Nations University (Maastricht Economic and social Research and training centre on Innovation and Technology (MERIT) Working Papers, Netherlands. Sourced from: http://ideas.repec.org

Humphrey, J (2000) Assembler-Supplier Relations in the Auto Industry: Globalisation and National Development, *Competition and Change*, Vol.4, 245-271.

Humphrey, J and Memedovic, O (2003) The Global Automotive Industry Value Chain: What Prospects for Upgrading by Developing Countries, in *UNIDO Sectoral Studies Series,* Vienna.

Humphrey, J, Lecler, Y and Salerno, M (eds) (2000) *Global strategies and local realities: The auto industry in emerging markets*, London, MacMillan.

Humphrey, J and Oeter (2000) Motor industry policies in emerging markets: Globalisation and the promotion of domestic industry. In Humphrey, J., Lecler, Y. and M Salerno (eds) *Global strategies and local realities: The auto industry in emerging markets*, London, MacMillan.

Kaplan, D (2005) MIDP "Link to Car Prices Must Not be Ignored" *Business Report* October 19.

Lamprecht, N (2006) Analysis of the Motor Industry Development Programme (MIDP) as a promotional tool for the South African automotive industry in the global automotive environment, M Com thesis, UNISA.

Lung, Y (2000) Is the rise of emerging countries as producers an irreversible phenomenon? In Humphrey, J., Lecler, Y. and M Salerno (eds) *Global strategies and local realities: The auto industry in emerging markets*, London, MacMillan.

NAAMSA (2006) Annual Report 2006. Pretoria: National Association of Automobile Manufacturers of South Africa.

Roberts, S (2005) Industrial development and industrial policy in South Africa – a ten year review. School of Economic and Business Sciences, University of Witwatersrand.

Roberts, S (2006) Smart Industries: The Importance of Technology and R&D for Industry Performance, TIPS Trade and Industry Monitor, Vol. 37.

SAABC (2006) Does ownership matter in the South African component industry: South African versus MNC-owned firm performance levels, *SAABC Newsletter*, Vol.9 No.2, March/April 2006.

Subash, S (2006) Foreign Direct Investment, Firm-Level Capabilities and Human Capital Development: Evidence from Indian Manufacturing Industry, United Nations University (Maastricht Economic and social Research and training centre on Innovation and Technology (MERIT) Working Paper No.010, Netherlands. Sourced from: http://ideas.repec.org/

UNIDO (1986) Industrial Policies and Strategies in Developing Countries: An Analysis of Local Content Regulations, *Industry and Development*, Working Paper 18, 19-98.

Verband der Automobilindustrie (VDA) (2007) The Economic Situation of the Automotive Industry in the Year 2006, Frankfurt.

Womack, J, Jones, D and Ross, D (1990) *The Machine that Changed the World,* New York, Rawson Associates.

APPENDIX A

Table A1: Components Exports (2003-2005)

	EXPORT (R'000)			Rank	Proportion 2005
Automotive Products	2005	2004	2003	2005	%Total
CATHALYTIC CONVERTORS	9,934,758	8,288,474	8,104,309	1	42.03%
OTHER COMPONENTS	3,015,008	2,981,573	2,828,360	2	12.76%
SEAT PART/LEATHER COV	2,693,417	3,112,858	2,899,008	3	11.40%
TYRES	1,183,288	1,285,295	1,278,416	4	5.01%
ENGINE PARTS	999,552	894,187	843,409	5	4.23%
ENGINES	781,173	700,763	564,256	6	3.31%
ROAD WHEELS/PARTS	737,537	752,708	808,656	7	3.12%
MEDIUM/HEAVY VEHICLES	696,228	491,394	880,767	8	2.95%
SILENCERS/EXHAUSTS	492,237	407,387	327,344	9	2.08%
GLASS	359,438	311,095	306,853	10	1.52%
AUTOMOTIVE TOOLING	331,676	382,562	528,795	11	1.40%
CAR RADIOS	268,410	257,132	331,963	12	1.14%
WIRING HARNESSES	258,298	359,292	426,660	13	1.09%
TRANSMISSION SHAFT	225,013	71,680	56,688	14	0.95%
RADIATORS	219,975	161,611	190,874	15	0.93%
AXLES	201,141	140,263	118,571	16	0.85%
IGNITION START EQUIP	184,503	229,668	270,142	17	0.78%
FILTERS	174,340	163,974	142,362	18	0.74%
GAUGES/INSTR PARTS	160,811	142,098	127,624	19	0.68%
BRAKE PARTS	120,403	146,270	198,231	20	0.51%
ALARM SYSTEMS	110,795	110,017	129,788	21	0.47%
BODY PARTS/PANELS	77,902	115,892	167,673	22	0.33%
BATTERIES	75,363	114,146	106,422	23	0.32%
CLUTCHES/SHAFT COUP	72,739	97,160	83,838	24	0.31%
SEATBELTS	61,400	49,118	56,826	25	0.26%
LIGHTING EQUIP/PARTS	53,776	37,819	43,261	26	0.23%
GASKETS	35,906	42,688	36,974	27	0.15%
STEERING WHEELS/BOX	32,488	71,327	58,510	28	0.14%
SPRINGS	28,373	23,440	25,745	29	0.12%
ORIGINAL EQUIPMENT COMP FOR M/VEHICLES	16,806	8,572	37,741	30	0.07%
AIR CONDITIONERS	14,083	11,719	20,679	31	0.06%
JACKS	9,733	22,779	23,728	32	0.04%
SHOCK ABSORBERS	5,130	4,624	6,083	33	0.02%
SEATS	3,494	3,455	5,521	34	0.01%

Source: DTI

Table A2: Components Imports (2003-2005)

Automotive Products	IMPORT (R'000)			Rank	Proportion 2005
	2005	2004	2003	2005	%Total
ORIGINAL EQUIPMENT COMP FOR M/VEHICLES	30,625,892	26,111,039	24,325,326	1	63.17%
OTHER COMPONENTS	5,566,321	4,421,626	5,150,071	2	11.48%
MEDIUM/HEAVY VEHICLES	1,818,534	1,256,263	1,238,424	3	3.75%
ENGINE PARTS	1,535,508	1,395,400	1,415,574	4	3.17%
AUTOMOTIVE TOOLING	1,229,044	1,727,979	1,002,302	5	2.53%
TYRES	1,224,726	1,005,381	898,993	6	2.53%
SEAT PART/LEATHER COV	827,758	630,046	630,762	7	1.71%
GAUGES/INSTR PARTS	666,056	549,366	483,110	8	1.37%
BRAKE PARTS	599,336	513,076	428,734	9	1.24%
LIGHTING EQUIP/PARTS	398,919	265,384	238,201	10	0.82%
CAR RADIOS	320,124	326,775	297,627	11	0.66%
AXLES	315,114	199,951	210,575	12	0.65%
TRANSMISSION SHAFT	310,851	290,578	307,146	13	0.64%
ROAD WHEELS/PARTS	279,057	187,542	135,899	14	0.58%
STEERING WHEELS/BOX	262,851	191,811	171,736	15	0.54%
CATALYTIC CONVERTORS	255,670	337,106	365,071	16	0.53%
BODY PARTS/PANELS	242,585	179,978	137,614	17	0.50%
BATTERIES	225,502	151,521	141,108	18	0.47%
IGNITION START EQUIP	209,909	182,303	155,680	19	0.43%
CLUTCHES/SHAFT COUP	204,593	193,692	184,166	20	0.42%
ENGINES	198,752	184,780	118,576	21	0.41%
FILTERS	195,851	174,341	147,543	22	0.40%
GASKETS	178,608	165,896	177,115	23	0.37%
SILENCERS/EXHAUSTS	133,285	96,664	103,386	24	0.27%
RADIATORS	122,380	97,813	87,802	25	0.25%
ALARM SYSTEMS	119,626	92,813	108,917	26	0.25%
WIRING HARNESSES	103,344	57,224	55,998	27	0.21%
GLASS	102,938	80,945	68,158	28	0.21%
AIR CONDITIONERS	88,658	80,144	129,424	29	0.18%
SPRINGS	50,732	48,482	34,772	30	0.10%
SEATBELTS	31,114	34,775	22,173	31	0.06%
JACKS	21,983	27,507	16,739	32	0.05%
SEATS	21,155	19,054	31,715	33	0.04%

Source: DTI

Table A3: Auto Components Trade Balance (2003-2005)

Code	Trade Balance		
Automotive Products	2005	2004	2003
CATHALYTIC CONVERTORS	9,679,088	7,951,368	7,739,237
SEAT PART/LEATHER COV	1,865,659	2,482,812	2,268,247
ENGINES	582,421	515,983	445,680
ROAD WHEELS/PARTS	458,480	565,166	672,657
SILENCERS/EXHAUSTS	361,952	310,724	223,958
GLASS	258,533	230,150	238,695
WIRING HARNESSES	154,954	302,068	378,662
RADIATORS	97,595	63,798	103,072
SEATBELTS	30,286	14,343	34,653
SEATS	-17,661	-15,598	-26,194
JACKS	-12,250	-4,728	6,989
SPRINGS	-22,359	25,342	-9,027
ALARM SYSTEMS	-9,031	17,204	20,871
FILTERS	-21,511	-10,367	-5,181
CAR RADIOS	-51,714	-69,643	34,337
AXLES	-113,973	-59,688	-92,004
AIR CONDITIONERS	-74,575	-68,425	-108,745
GASKETS	-142,702	-123,208	-140,141
BATTERIES	-150,140	-37,375	-34,686
IGNITION START EQUIP	-25,405	47,365	114,463
CLUTCHES/SHAFT COUP	-131,854	-96,531	-100,327
BODY PARTS/PANELS	-164,683	-64,087	30,059
TRANSMISSION SHAFT	-85,838	-218,898	-250,458
STEERING WHEELS/BOX	-230,363	-120,484	-113,225
LIGHTING EQUIP/PARTS	-345,143	-227,265	-194,940
GAUGES/INSTR PARTS	-505,245	-407,268	-355,486
TYRES	-41,438	279,914	379,426
BRAKE PARTS	-476,933	-366,806	-230,503
ENGINE PARTS	-535,955	-501,213	-572,166
AUTOMOTIVE TOOLING	-897,368	-1,345,417	-473,507
OTHER COMPONENTS	-2,551,313	-1,440,053	-2,321,711
ORIGINAL EQUIPMENT COMP FOR M/VEHICLES	-30,639,086	-26,102,467	-24,287,285
Total Product	***-23,731,605***	***-18,523,668***	***-16,632,580***

Source: DTI

Table A4: Regression Results for Local Content

Dependent Variable: Local Content				
Variable	Coefficient	Std. Error	T-Stat.	Prob.
C	93.[illegible]563	[illegible]0.45805	8.903729	0.0000
EMPLOY	0.0[illegible]0538	0.017207	0.612428	0.5437
TURNOVER	1.45E-08	3.06E-08	-0.473684	0.6383
TIER 1	10.93084	10.82253	-1.010008	0.3185
MNC	-35.11778	9.053809	-3.878779	0.0004
EXPORTS	0.042829	0.159729	0.268137	0.7900
R-squared	0.412791	F-statistic		5.623776
Adjusted R-squared	0.339390	Prob(F-statistic)		0.000513
Durbin-Watson stat.	1.863495			

Figure A1: Local Content by Firm Size

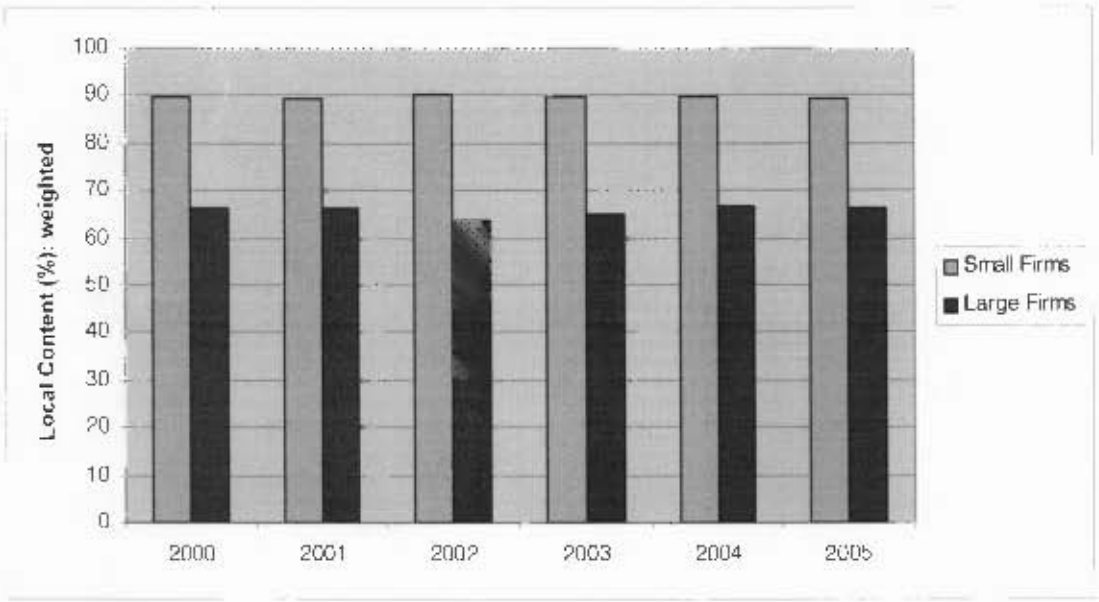


Figure A.1 shows that bigger firms have lower levels of local content in their products compared to smaller firms.