The Motor Industry Development Programme 1995-2012: What have we learned?

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ABSTRACT

The Motor Industry Development Programme (MIDP) has been one of the most significant industrial policy interventions since 1994, both because of the powerful incentive structure it established and because of the sheer size of the industry it impacted. Because of these factors, as well as the cost of support, the industry is central to any analysis of the impact of South African industrial policy on employment and inclusive growth – and not only within the sector itself but more importantly on the economy as a whole. This experience also has lessons for the conduct of industrial policy in other sectors.

The MIDP reduced tariffs and provided strong support for exports. The result was rapid export expansion, although the sector remains vulnerable to declining support. Domestic consumers have far greater choice but soaring vehicle and parts imports have contributed to a growing trade deficit. Progress has been made in rationalising the industry but it still operates below minimum efficient scale. Growing investment and much higher levels of foreign ownership have modernised the sector and integrated it into global production networks. But the orientation of MNCs is towards the domestic market and South Africa is a long way from being a true export platform for global firms.

The paper concludes with some lessons from nearly two decades of policy experience including some comments about the recent introduction of the replacement Automotive Production and Development Programme (APDP). The growth and structure of the industry has arguably been too influenced by automotive policy. Long term certainty and gradual policy adjustments should be the objective and policy makers must be cautious about policy which diverts too far from market outcomes. While the MIDP has made a positive impact on the development of the industry, its provision of easy access to import credits has resulted in a rapid climb in imports, arguably to unsustainable levels. This trend has continued under the APDP in 2013 and needs to be substantially curbed. Policy should have the objective of reducing the share of imported vehicles and components below current levels.

The important question of cost of the MIDP is only briefly addressed. The key point is that the MIDP marked a decline in support from its inception and this support declined steadily through the course of the programme. A related question is the whether the sector will continue to rely on high levels of state assistance to remain viable. In this regard, one fundamental recent change has brightened prospects considerably. Rapid growth in the southern African region and in Africa as a whole will, in the medium term, provide a large and rapidly growing regional and continental market, the lack of which has always been the Achilles' heel of the domestic industry. Properly handled, this represents an opportunity for rapid and sustainable growth in the sector in South African and the region.

1. INTRODUCTION

The automotive industry is one of South Africa's largest manufacturing sectors and has a long history of government support. From 1995-2012, it was subject to the Motor Industry Development Programme (MIDP) which has perhaps been the most significant industrial policy intervention since 1994, both because of the powerful incentive structure it established and because of the size of the industry it impacted.

The South African automotive industry grew under high levels of protection. While considerable diversified development took place under this protective regime, the industry was highly inward oriented. In a process, which began in 1989 and accelerated with the introduction of the MIDP in 1995, the automotive industry has become increasingly exposed to international competition as government has sought to make it more competitive and also to encourage exports and a more rational industry structure. Lower tariffs were accompanied by import-export complementation arrangements, which enabled firms to rebate import duties by exporting. As a result of these measures, the industry has been through a period of rapid international integration and structural change.

Trade liberalisation reduces the prices of liberalised products relative both to other goods in the domestic market and to similar commodities internationally. Both standard trade theory and the general equilibrium models used to analyse the sectoral impact of tariff reductions predict a fall in output for the affected sector with the benefits accruing to the rest of the economy in the form of lower prices and a more efficient allocation of resources. But reality at the sectoral level is more complex especially in the context of import-export complementation arrangements and there are a number of important dynamic effects, which impact on outcomes in the sector in question. While the reduction in relative prices would of itself be to the detriment of the sector, these changes are refracted through the prism of variables such as domestic demand (influenced by lower prices), structural change (which may reduce production costs), growing international integration (which will impact on investment and trade in the sector) and productivity enhancement (influenced by the level of investment and by growing competition). These dynamic effects are of particular importance in a sector such as the automotive industry where economies of scale are important and where a handful of multinational vehicle producers dominate global production and exercise considerable influence over the location of new investments by first tier component suppliers. In this environment, comparative advantage is much less a function of existing endowments as suggested by conventional trade theory. Rather, comparative advantage emerges as the outcome of three

complex, interrelated forces: the global strategy of multinational corporations, host country policy and domestic (and regional) market conditions.

Views on the impact of the MIDP vary widely. In his overview of economic reform since 1994, Hirsch (2005) cites the MIDP as one of the "notable successes" (p. 159) of this period and argues that "the automobile assembly and component sectors were strongly assisted by a well-designed Motor Industry Development Programme" (p. 250). While acknowledging the strides made in productivity, earlier work by Barnes and Kaplinsky (2000a, 2000b) pointed to weaknesses in the domestically owned component industry and the growing role of foreign ownership. Barnes, Kaplinsky and Morris (2004) argue that it helped develop dynamic competitive advantage in the industry. Black (2009), while acknowledging that the MIDP has facilitated a strong supply response to the changed incentive regime because it encouraged international automotive firms to integrate South African based producers into global networks, points to the limitations of this process and the fact that South Africa is far from being an export hub. Flatters and Netshitomboni (2007) take a much more critical view, citing the heavy costs of the MIDP and arguing for more rapid liberalisation. The MIDP has also received considerable positive media comment over a long period.[3] This has focused on what has been achieved, for example, in terms of export expansion, new foreign investment or vehicle prices. More recently, there has been a greater focus on negative attributes, especially the costs of the programme.[4]

The aim of this paper is to assess the impact of the MIDP in terms of the objectives set by government. It also considers the question of the whether the MIDP has been worth its heavy cost and what lessons can be learned for industrial policy more generally. Section two provides a brief overview of the development of the industry. The MIDP and its objectives are explained in section three. The main part of the paper (section four) examines the impact of the MIDP. Section five concludes with some lessons from this experience.

2. THE DEVELOPMENT OF THE SOUTH AFRICAN INDUSTRY

The South African vehicle market grew very rapidly from 1950 to the early 1980s with sales increasing tenfold over this period. The market stagnated during the 1980s as the economy entered a phase of very slow expansion with growth constrained by political instability and increasing international isolation. Gradual recovery followed and after 2002, sales grew strongly, boosted by rising incomes, a strong rand and low interest rates reaching record levels of 714,000 units in 2006. Sales plummeted in the aftermath

[3] See for example 'Development programmes SA's biggest success story' (*Sunday Times, Business Times*, 25 March, 2007); 'State motor plan a success says KPMG' (*Business Report*, 7 March, 2007); 'Export deal revs SA car industry into life' *(Sunday Times, Business Times*, 21 September, 2003)

[4] See for example, 'Costly ambition' (Financial Mail, 23 May, 2013).

of the global financial crisis, but recovered to reach 624,000 vehicles in 2012. This constitutes a fairly small market in global terms and the regional market, apart from South Africa, remains very small. Production has tracked sales quite closely but recently has failed to keep pace with the expansion in the domestic market. In 2012, 540,000 vehicles were produced, of which 52.4% were exported.

Table 1: Production and exports of passenger cars/light commercial vehicles – 1995 to 2012

	Passenger cars				Light commercial vehicles			
	Market			Exports as a % of total	Market			Exports as a % of total
	Domestic	Exports	Total		Domestic	Export	Total	
1995	233 512	8 976	242 488	3,7	127 363	6 356	133 719	4,8
1996	231 616	3 743	235 359	1,6	128 516	7 125	135 641	5,3
1997	215 784	10 458	226 242	4,6	113 204	8 000	121 204	6,6
1998	174 870	18 342	193 212	9,5	98 056	6 806	104 862	6,5
1999	159 944	52 347	212 291	24,7	95 326	6 581	101 907	6,5
2000	172 373	58 204	230 577	25,2	104 121	9 148	113 269	8,1
2001	172 052	97 599	269 651	36,2	113 111	10 229	123 340	8,3
2002	163 474	113 025	276 499	40,9	101 956	11 699	113 655	10,3
2003	176 340	114 909	291 249	39,5	102 007	11 283	113 290	10,0
2004	200 264	100 699	300 963	33,5	123 467	9 360	132 827	7,0
2005	210 976	113 899	324 875	35,1	146 933	25 589	172 522	14,8
2006	215 311	119 171	334 482	35,6	159 469	60 149	219 618	27,4
2007	169 558	106 460	276 018	38,6	156 626	64 127	220 753	29,0
2008	125 454	195 670	321 124	60,9	118 641	87 314	205 955	42,4
2009	94 379	128 602	222 981	57,7	85 663	45 514	131 177	34,7
2010	113 740	181 654	295 394	61,5	96 823	56 950	153 773	37,0
2011	124 736	187 529	312 265	60,1	108 704	84 125	192 829	43,6
2012	121 677	153 196	274 873	55,7	112 118	123 623	235 741	52,4

Note: Medium and heavy commercial vehicles are excluded from this table.
Source: AIEC (2013)

There are currently seven producers of light vehicles in South Africa and there have been no major new entrants into the assembly industry over the last decade. There has, however, been a significant increase in foreign ownership and all assemblers are now wholly owned by multinational firms. This was not the case in the early 1990s, when most assemblers were under majority local ownership. There has also been growing foreign ownership in the component sector, which numbers some 350 firms. The majority of large component firms (over 500 employees) are now foreign owned.

Early policy developments

In many respects, South Africa followed a programme of import substitution similar to that adopted in other developing countries, especially in Latin America. High tariffs were placed on built up vehicles which when combined with a rapidly growing market, acted as a magnet to a large number of (initially foreign) companies which established assembly plants in the country. These operations, although in many cases highly profitable, were very small in international terms with correspondingly high unit costs.

Production was aimed solely at the domestic market and the South African assembly plants were kept isolated from the global production networks of the parent companies except as markets for completely knocked down (CKD) packs of imported parts (Black, 2001).

The first in a series of local content programmes was introduced in 1961 and followed by a number of adjustments which increased local content requirements over time. Considerable diversified development took place under this protective regime. Imports of vehicles were minimal. A major driver was foreign direct investment but there was also significant domestic ownership, especially in the component sector. The component industry developed significant investment and production capability as well as the capacity to innovate in process development and to a lesser extent in product development. A major problem was the failure to use some form of industrial policy to limit the excessive proliferation apparent in the large number of models and makes of vehicle being assembled in low volume. This in turn forced component firms to produce at below efficient scale.

The problems of high protection and associated low volume production had become increasingly apparent by the late 1980s. South Africa's automotive industry was inefficient and highly inward oriented. Phase VI of the local content program, introduced in 1989, marked the beginning of reduced protection for the industry. The component sector was partly liberalized and vehicle producers could meet part of their local content requirements by exporting and, as such, were proactive in developing international marketing channels. Exports rose rapidly from negligible volumes in the mid-1980s to R2,245 million in 1994. The level of protection on built up vehicles, however, remained prohibitive at 115% (100% ad valorem plus 15% surcharge). In the early 1990s, South African car prices were well above international prices and Phase VI was widely blamed in the media and by industry analysts as being a contributing factor. Also, Phase VI did nothing to reduce the proliferation of models being assembled domestically. This proliferation of models was in turn one of the major reasons for the component sector being uncompetitive.

3. THE MOTOR INDUSTRY DEVELOPMENT PROGRAMME

The Introduction of the MIDP

Phase VI came in for heavy criticism particularly from the component producer federation, NAACAM, who were concerned with rising import competition and the fragmented structure of the assembly industry. In late 1992, a tripartite forum, the Motor Industry Task Group (MITG) was appointed to re-examine the programme and advise government as to the future development policy for the industry. Government also made it clear that tariffs had to be reduced in line with the country's GATT obligations.

All stakeholders were able to agree on the basic architecture which drew on the 1985 Australian Passenger Motor Vehicle Manufacturing Plan, more commonly known as the 'Button Plan', that consisted of duty phase downs and a facility under which vehicles and component exporters could rebate import duties. However, there were protracted and sometimes acrimonious discussions on the actual levels of these policy parameters. In the final announcement of the MIDP, Government only partly accepted the recommendations of the MITG. Most notably, the contentious proposal to encourage higher model volumes and force a degree of rationalisation was not accepted, as a result of strong opposition from the vehicle producers' federation, NAAMSA.

The MIDP continued the direction taken by Phase VI and entrenched the principle of import-export complementation. However, it went a step further by abolishing local content requirements and introducing a tariff phase down at a steeper rate than required by the terms of South Africa's offer to the GATT.

The main elements of the MIDP were the following[5]:

a) The excise duty based local content system was dropped and replaced by a tariff driven programme.
b) Tariffs on light vehicles were to be phased down to 40% for light vehicles and 30% for components by 2002.
c) Manufacturers of light vehicles for the domestic market were entitled to a duty free allowance (DFA). Components to the value of 27% of the wholesale price of the vehicle could be imported duty free.
d) Import duties on components and vehicles could be offset by Import Rebate Credit Certificates (IRCCs) derived from the export of vehicles and components.

While nominal duties on imported vehicles were set to remain quite high in the medium term, the ability to rebate import duties by exporting, enabled importers to bring in vehicles at lower effective rates of duty. Import-export complementation also enabled assemblers to use import credits to source components at close to international prices. These credits could also be traded. Thus declining nominal protection on vehicles was to some extent, therefore, compensated by reduced protection for components.

An important difference with the Australian plan was the fact that import credits could be earned on the full domestic content value of exports, including raw material content. In the Button plan, only value

[5] A Small Vehicle Incentive (SVI) was also introduced, which gave vehicle assemblers an additional duty rebate incentive on the assembly of entry-level vehicles. This incentive was, however, removed in 1999.

added within the automotive industry qualified. The result of this distinction was that the MIDP provided a strong export incentive on products with high raw material content and corresponding low 'automotive value added'. The DTI was itself divided on this issue and after the introduction of the MIDP, the feasibility of a 'value added' system was investigated but never implemented. This proved to be a serious error. Exceptionally rapid export growth, especially of raw material intensive components such as automotive leather and catalytic converters, led to a rapid decline in protection for the component sector, and a disincentive on the part of vehicle assemblers to increase their local content levels.

To assess the impact of the MIDP and provide long term policy certainty to the industry, the DTI conducted two policy reviews, in 1998 and 2002. These extended the MIDP, first until 2007 and later until 2012 but on a phasing down basis. The gradual decline in tariffs continued and the import/export complementation provisions were retained, although the qualifying value of eligible export performance declined from 2003 (Table 2). This meant that while exports of components with a local content value of R100 would allow the exporter to import R100 of components on a duty free basis in 2002, by 2012 only components to the value of R70 could be imported. Coupled with the continuing phase down of tariffs this meant that export assistance was reduced quite rapidly. It also offset, to some extent, the liberalising effect of tariff reductions by requiring a greater level of exports to rebate duties on a given level of imports.

In the 1998 review there were again extensive discussions regarding the imposition of direct industrial policy measures to rationalise the industry, but these were not adopted. An important late change introduced into this process as a result of concerted pressure on the Minister of Trade and Industry by vehicle manufacturers, who were planning major export programmes, was the introduction of a Productive Asset Allowance (PAA). In terms of the PAA, firms making 'qualifying investments'[6] received import duty credits equal to 20% of the value of these investments, spread over five years.

The Objectives of the MIDP

The initial objectives of the MIDP were to provide high quality affordable vehicles, provide sustainable employment and through increased production, contribute to economic growth (Department of Trade and Industry, 1997). More specifically, the MIDP was devised as a trade facilitating measure with very particular industry policy objectives. As a result of protection, the industry structure had historically been very fragmented and the resultant failure to achieve economies of scale had not only made the assembly industry inefficient, but imposed major negative externalities on the component sector. So an objective of

[6] 'Qualifying investments' had to contribute to the rationalisation of the industry. Component producers could also qualify but the vast share of the PAA went to vehicle producers.

the MIDP was to increase the volume and scale of production through a greater level of specialisation in terms of both vehicle models and components. The MIDP sought therefore to provide support for the automotive industry on a gradually declining basis. This required it to meet a number of objectives, including some protection for vehicle assembly and components production as well as support for exports and investment.

Table 2: The MIDP as Amended in the 1998 and 2003 Reviews

Year	Import duty		Qualifying value of eligible export performance	Qualifying PGM content	Ratio of exports against imports		
	Built up light vehicles	Original equipment components	Built up vehicles and components (excluding tooling)	Catalytic Converters exported	Components, heavy duty vehicles & tooling exported: CBU light vehicles imported	Components, vehicles and tolling exported: Components, heavy vehicles and tooling imported	Built up light vehicles exported: Built up light vehicles imported
1999	50,5%	37.5%	100%	90%	100:75	100:100	
2000	47%	35%	100%	80%	100:70	100:100	
2001	43,5%	32,5%	100%	60%	100:70	100:100	
2002	40%	30%	100%	50%	100:65	100:100	
2003	38%	20%	94%	40%	100:60	100:100	
2004	36%	28%	90%	40%	100:60	100:100	
2005	34%	27%	86%	40%	100:60	100:100	
2006	32%	26%	82%	40%	100:60	100:100	
2007	30%	25%	78%	40%	100:60	100:100	
2008	29%	24%	74%	40%	100:60	100:100	
2009	28%	23%	70%	40%	100:60	100:100	
2010	27%	22%	70%	40%	100:60	100:100	
2011	26%	21%	70%	40%	100:60	100:100	
2012	25%	20%	70%	40%	100:60	100:100	

Sources: Adapted from Black and Barnes (2003) and NAAMSA (2005)
Notes: The Duty Free Allowance of 27% remained unchanged during this period.
The Productive Asset Allowance (PAA) was put in place until 2007 to be reviewed later.

Essentially what was sought was a transition from completely knocked down (CKD) assembly, which was characteristic of vehicle production in protected developing country markets, through a transition stage to full manufacturing (Table 3). CKD assembly involves relatively light investments in spite of the

fact that the need for precision welding and advanced painting processes in modern CKD plants increasingly require larger capital outlays (Sturgeon and Florida, 1999). Under CKD assembly, production costs are usually quite high especially if a high level of localisation is stipulated by government policy. High local content requirements necessarily require much higher levels of investment and tend to encourage rationalisation.

Table 3: Stages in the Development of Vehicle Production in South Africa

	CKD assembly	**Transition**	**Full manufacturing**
Target market	Domestic	Domestic and export	Domestic and export
Level of integration with parent company	Low; import of CKD packs	Medium	High
Model line up	Many models	One or two	One or two
Derivatives	Limited to reduce costs	Full range to supply export market	Full range to supply export market
Local content	Generally low but may be quite high as a result of local content requirement	Moderate based primarily on cost factors	Medium to high
Quality	Below source plant	Equal to source plant	Equal to source plant
Production cost	High	Medium; penalties incurred by high logistics costs	Low
Domestic design	Local adaptations	None	None - may do world wide R&D in niche areas

Source: Black (2001).

In the transition and full manufacturing stages, where exports may become substantial, both quality standards and the number of derivatives offered, need to be in line with international practice.[7] Production volumes per model also increase in the transition stage and under full manufacturing would approach world scale. Because firms are exporting, they would need access to components at world prices, so in spite of higher volumes in the transition stage, local content levels may not increase. In the full manufacturing stage, much higher volumes would normally be attained, encouraging vehicle makers to localise components on an economic basis.

[7] The term 'derivative' refers to the different permutations within a 'basic model'. Examples include engine size and body (e.g. saloon or hatchback) configuration. The carmaker would also have to offer more minor permutations such as a wide range of colours, types of steering wheel etc.

4. THE IMPACT OF THE MIDP

International competition in the South African automotive industry increased substantially as a result of the MIDP. Vehicle manufacturers faced the prospect of the domestic market being eroded by imports as tariffs were reduced from prohibitive levels and as growing exports enabled firms to offset import duties. The component sector, which had only just begun the transition from low volume, flexible production faced further restructuring and consolidation. The outcome of the shift towards more open markets depended not only on the level of import penetration, but also on the supply response of firms, especially in terms of investment and export expansion.

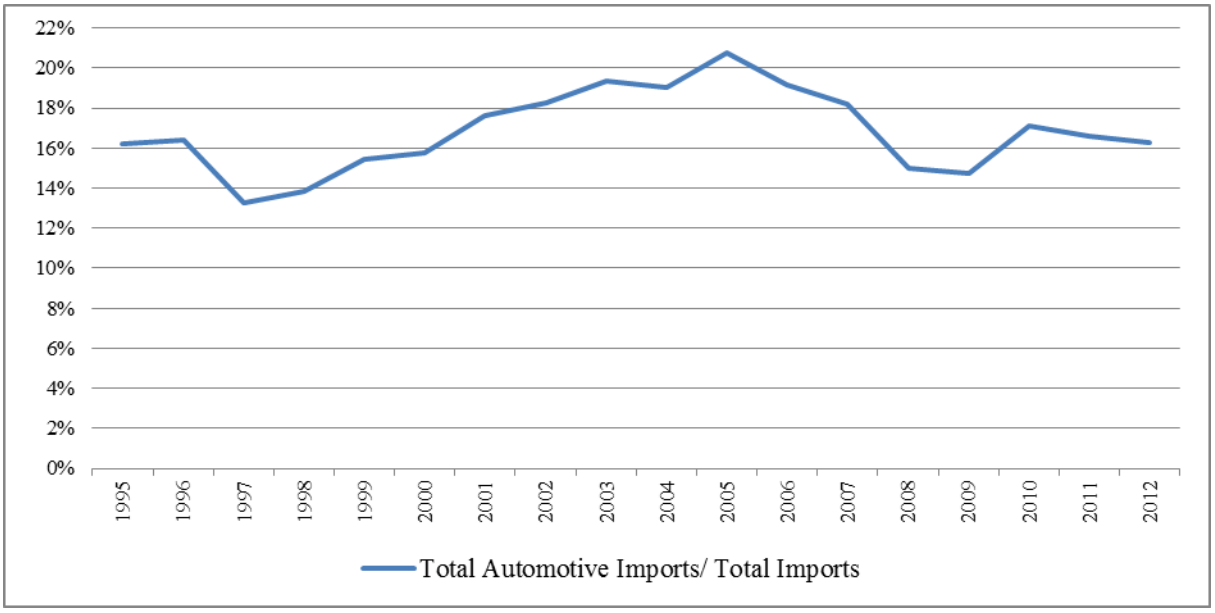
Automotive trade: The share of imports

As protection is reduced, imports can be expected to gain a larger share of the domestic market and rapid import expansion can threaten the viability of local producers, not only by eroding their domestic market share but also by limiting their capacity to take advantage of new export opportunities. Until the early 1990s, high protection resulted in very low volumes of vehicle imports. However, total imports of vehicles and components have grown at a more rapid rate than policy makers expected, in nominal terms from R16.4 billion in 1995 to R 136.1 billion in 2012 (AIEC, 2013: 32). Automotive imports account for a significant share of total imports; on average approximately 17% between 1995 and 2012 (Figure 1). Interestingly, the overall share of automotive imports has not increased over the period although it is highly cyclical. This, of course, is indicative of the rising share of imports in the South African economy as a whole. Nevertheless, the major contribution of the automotive sector to South Africa's trade deficit has major macroeconomic implications.

Figure 2 shows that at the inception of the MIDP, the automotive trade balance improved. From 2004, a recovering rand and booming consumer demand led to rapid growth in imports and a deteriorating trade balance. In 2008, record vehicle exports helped the deficit return to a more stable level (DTI, 2009), with this then followed by the slump in both exports and imports in the aftermath of the global financial crisis. Since 2009, the marginal growth in exports has been overwhelmed by the rapid increase in imports.

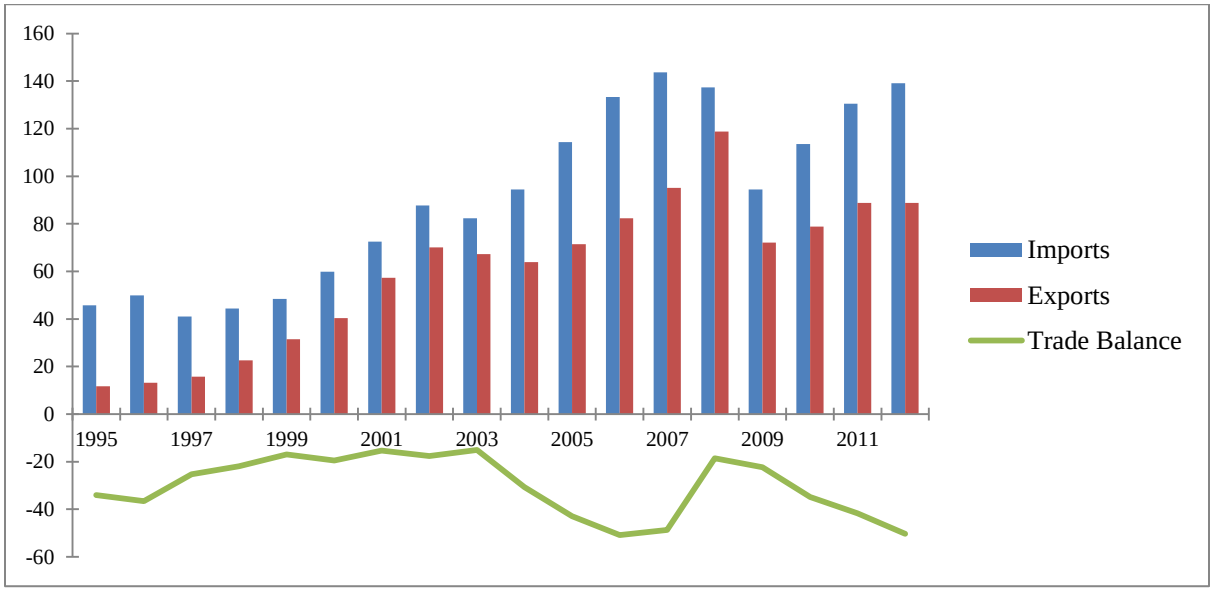
The nominal tariff on light vehicles, at 25% in 2012 was still reasonably high and cannot on its own explain the rapid increase in automotive imports. The key factor was that the MIDP enabled firms to rebate import duties by exporting. An important aspect of the strategy of the carmakers operating in South Africa was to expand market share via a combination of local production and vehicle imports. Importing vehicles and components incurred import duties and much of the strategic behaviour of firms was, therefore, directed at optimising their duty position.

Figure 1: Automotive Imports as a Percentage of Total Merchandise Imports, 1995-2012



Sources: Duxbury (2013), NAAMSA Annual Reports (various years), Automotive Export Manual (various years), SARS.

Figure 2 : Automotive Trade Balance, 1995-2012 (R billion, constant 2012 prices)



Source: NAAMSA Annual Reports (various years), StatsSA, Duxbury (2013)

Minimising duty payments could be achieved in a number of ways. Firstly, firms could limit vehicle imports. Secondly, local content in domestically produced vehicles could be increased. Thirdly, vehicle producers could expand exports either of vehicles or components. As exports increased so did the ability to import automotive products without paying duty. In addition, carmakers undertaking specified investments which qualified under the Productive Asset Allowance, also received import credits although these were at a relatively low level in comparison to the credits earned via exporting. The value of Import Rebate Credit Certificates is therefore central to understanding the impact of exports on the ability to offset import duties. In this respect it is important to note the phasing down in the qualifying percentage of platinum in catalytic converter exports from 1999 and the phased reduction in the qualifying percentage of all exports from 2003 (Table 2). In spite of the phasing down of export assistance, vehicle manufacturers were able to offset nearly all import duties. From 1996-2011, the average level of duty paid by vehicle manufacturers was only 0.6% of the total value of their imports of vehicles and components over this period.[8]

Vehicle Imports

The opening up of the economy and the phasing down of tariffs have led to an increased level of light vehicle imports which increased from under two percent of the market in 1990 to 13.9%[9] in 1997 and nearly 40% by 2005. Until the surge in imports during 2004-2005, increases were roughly in line with the expectations of policymakers and from 1999-2003, the numbers of vehicles exported in some years exceeded imports. By 2012, the share of imported vehicles had increased to 58.1% of total new vehicle sales (AIEC, 2013).

Domestic vehicle producers, especially those firms, which had established large-scale vehicle export programmes, accounted for the major share of vehicle imports. This expansion was related to the rationalisation of production in the domestic market to a reduced number of platforms, the raising of production per model and growing exports. This strategy generally required an export allocation by the parent company, which in turn was seeking to expand market share (including the sale of imported models) in South Africa.

Components and Local Content

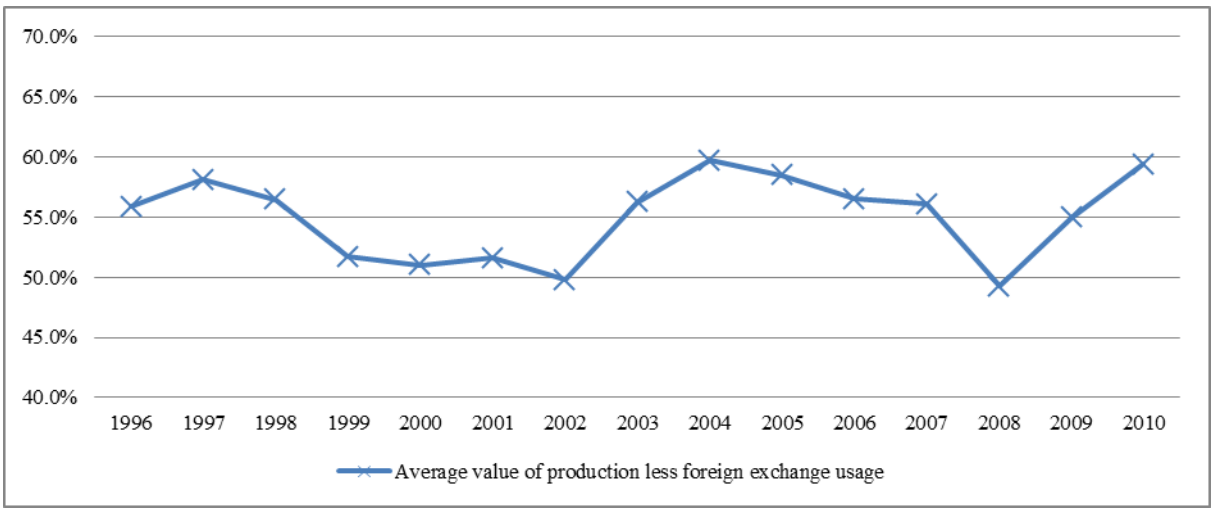
A key policy issue in the development of the automotive sector both in South Africa and other developing countries was the level of local content in domestically assembled vehicles. Local content can be defined in a number of ways and is notoriously difficult to measure. The 'level' of local content is also subject to

[8] Calculated from unpublished customs data (Duxbury, 2013).

[9] This includes imports of semi-knocked down vehicles imported under a temporary concession.

the vagaries of the exchange rate. For example, the 'official' definition of local content as vehicle wholesale price (value of production) less the vehicle assemblers' imported content in Figure 3, overstates the actual position as it includes assembly costs and profit margins, as well as imported content embedded in locally purchased components. With no change in the actual sourcing of components, higher prices and profits would mean a 'higher' level of local content, while the increased sourcing of imported components or materials by Tier 1 and Tier 2 suppliers would similarly not be captured in the figure. The trend depicted in Figure 3 is likely to be accurate, although the actual level of local content in South African assembled vehicles has probably averaged somewhere between 40 and 50% over the period.

Figure 3 : Local content in light vehicles based on value of production less imported content



Source: Unpublished Aggregate Customs Data (2012), Duxbury (2013)

Another indicator is the value of original equipment imports per vehicle domestically assembled. In constant rands this doubled from R107,000 per vehicle in 1996 to over R200,000 per vehicle in 2008 before declining to R168,000 in 2012 (Duxbury, 2013). A complicating factor here is the changing profile of vehicles produced. For example, part of this increase is accounted for by growing production for export of relatively expensive vehicles such as the BMW 3 Series and Mercedes C Class.

Under the MIDP, protection of the component sector was reduced. Local content requirements were abolished and duties declined, albeit gradually. Apart from declining protection, there are a number of further considerations. One of the objectives of the MIDP was to increase model volumes. These increased and could be expected to have a positive impact on the level of local content. There has also been significant foreign investment by first tier suppliers and a further key question is the extent to which these firms are engaged in assembly of imported parts or draw on the domestic supply base of second tier firms. In many instances, these firms operate as just-in-time sub-assemblers of imported components

using technologically advanced assembly jigs and testing equipment. They are not, however, responsible for any materials conversion processes and as such cannot be considered true manufacturers. The advanced materials conversion (and the associated tooling and technology investment) takes place outside of South Africa and local content and local value adding, even on large-scale vehicle export projects, has remained low (Black, 2009). This latter characteristic is supported by data drawn from the automotive component firms which belong to the South African Automotive Benchmarking Club, which show striking differences in the purchasing patterns of local and foreign owned component firms. Domestic component firms had local content of nearly 90% while the local content level for foreign owned component firms was below 70%. The reliance on foreign inputs partly reflects the assembly or 'system integrator' character of many foreign owned supplier operations and is in part a global trend.[10] This lack of local embeddedness may partly result from the limited time that foreign owned suppliers have been operating in South Africa.[11] But it also reflects the fact that many vehicle models are still being produced in volumes of 50,000 units per annum or less which does not justify heavy investment in component production.

The increase in local content since 2008 may, in part, be due to the announced provisions of the APDP. Local content levels are planned well in advance of new models being introduced and since the announcement of the basic parameters of the Automotive Production and Development Programme (APDP) in 2008, there have been some indications that local content levels may increase. A number of vehicle assemblers have cited the APDP as the reason for announced increases in local production and higher levels of local content.[12] But these measures of local content include assembly so actual local content in terms of local parts in domestically assembled vehicles would be much lower. Also, past announced plans have frequently not materialised, although the current weakness of the rand will encourage localisation.

On balance, one can conclude that there has been little change in local content since the introduction of the MIDP. However, local content levels had previously already declined during Phase VI and were low in absolute terms. The growth in model production volumes has certainly not led to any significant increase in local content but may have stabilised the situation under a regime of falling protection.

[10] See, for instance, Humphrey and Salerno (2000).

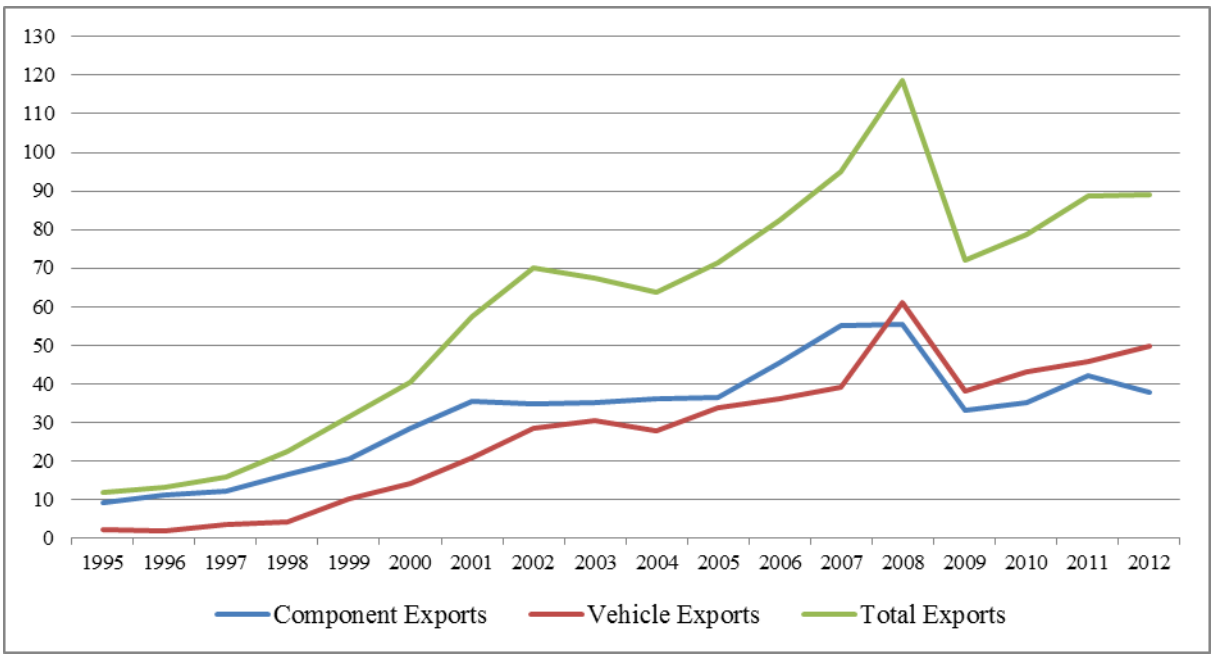
[11] Among Japanese electronics multinationals, Belderbos et al. (2001) found that Greenfield investments have lower local content than either joint ventures or acquired firms due to the latters' embeddedness in the local economy.

[12] See 'VW targets 80% local content, but warns that it won't be easy' (*Engineering News*, November, 2010) and 'South Africa: Toyota to boost local content to 70%' (*BusinessDay*, July, 2010).

The Supply Response: Exports

The growth of automotive exports has been the most striking feature of the development of the automotive industry under the MIDP. Total automotive exports at the start of the Phase VI programme in 1989 were only R443 million. At the inception of the MIDP in 1995 they amounted to R4.2 billion and by 2012 had reached R86.9 billion. In real terms this represents a compound annual growth rate of 12.1% (Duxbury, 2013). In 1995, automotive exports accounted for just 4% of total exports. This increased sharply to nearly 15% in 2003 but has since declined to just over 12% in 2012 (Figure 5)

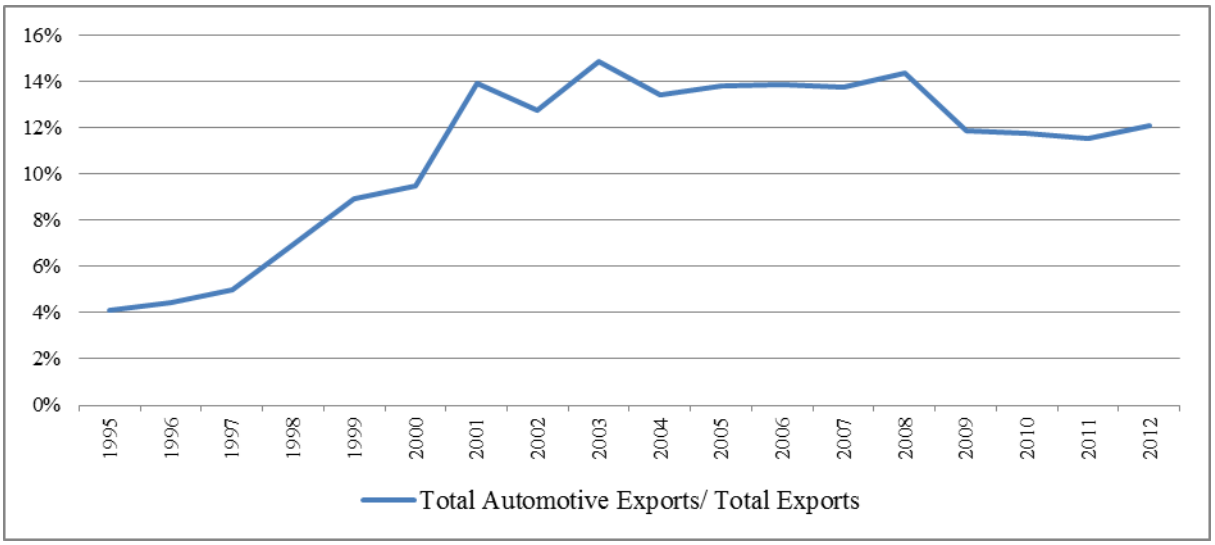
Figure 4: Automotive Exports, 1995-2012 (R billion, constant 2012 prices)



Sources: NAAMSA Annual Reports (various years), Automotive Export Manual (various years), SARS, Duxbury (2013).

A number of factors have accounted for rapid export expansion. The most important has been the import-export complementation arrangements under Phase VI and the MIDP. A second factor has simply been that falling protection and limited domestic market growth, until the mid-2000s, forced firms into the export market. Thirdly, the rand was quite weak over part of the period. The global downturn of 2009 led to a sharp reduction of South African automotive exports. Component exports to South Africa's largest market, the EU fell from €3.38 billion in 2008 to €2.13 billion in 2009 and have been slow to recover.

Figure 5: Automotive Exports as a Percentage of Total Exports, 1995-2012



Source: NAAMSA Annual Reports (various years), Duxbury (2013).

It is clear that the MIDP's incentive structure strongly favoured exports. But the very strong supply response to changes in the policy regime is also partly attributable to the nature of the automotive industry value chain. Because lead firms in the automotive value chain control global networks of assembly operations and linked supplier companies, they were able to rapidly facilitate exports either from their own South African operations or from South African based suppliers to their international operations.

Vehicle Exports

Vehicle exports have grown rapidly but as Figure 4 indicates, they lagged component exports during the early stages of the MIDP. Given the growth in exports of 'peripheral' components (such as automotive leather and catalytic converters) in the early years of the MIDP and the relatively slow growth of vehicle exports until the late 1990s, policy makers were concerned that vehicle producers were using the trade complementation arrangements of the MIDP to pursue 'low volume' as opposed to 'rationalisation' strategies. The problem was that vehicle manufacturers initially adopted a strategy of generating import credits by exporting components, which required only light investments. This allowed them to continue to introduce new, low volume models into the domestic market utilising imported components. Adopting this strategy offered an 'easy' route to achieving duty neutrality, certainly much easier than increasing local content in low volume, locally assembled vehicles. It also caused concern among established original equipment component suppliers to the domestic market who found assemblers adopting much more aggressive pricing strategies. But this strategy also left vehicle producers in a vulnerable position.

By failing to increase vehicle volumes through exporting, unit production costs remained high and vehicle manufacturers were progressively less able to compete as tariff reductions continued.

High volume vehicle exports are not just a function of competitiveness but depend on the global strategy of the parent company, including its desire to optimise global production capacity in the context of the policy regime prevailing in each production location. The parent company needs to take the major strategic decision to allocate specific markets to the home country assembler and then follow this up with the required investments. Rising production efficiencies, pressure on local margins as well as clear government policy are necessary to force the hand of the parent company. The result is that exports increase in a non-incremental fashion, dependent on the award of long term contracts. For instance, the three German firms (BMW, Mercedes and VW) were the first to be incorporated as vehicle exporters into their respective parent company networks. The result was that by 2001, these three firms exported over 90,000 vehicles while exports by the other four assemblers totalled only approximately 10,000 vehicles.

The boom in vehicle exports was driven by the MIDP. Firms did not perceive South Africa as an export platform. Nevertheless, costs were low in some respects and the weak currency up until 2002, and after 2011, offered some advantage. But South African operations incurred significant cost disadvantages in the area of inbound and outbound logistics. This was a function of high transport costs and long distances to foreign markets as well as high levels of imported content. The expansion of low cost capacity in central Europe posed a further problem. As a result, South African firms were essentially 'swing' producers into a wide range of markets depending on fluctuations in global demand, and thereby occupying a peripheral position in the global networks. An indication of this is that no South African assembler has yet been allocated sole or even lead global responsibility for a single model.

The regional market has been of only minor importance. Apart from the small size of these economies, cheap imported used vehicles have undermined their markets for new cars. But rapid growth in the rest of Africa together with developing regional integration arrangements means that the market is growing in importance. For example, in 2005 vehicle exports to SADC amounted to only R890 million, or 4.2% of total vehicle exports. By 2012, the figure had increased to R3.7 billion, or 7.6% of light vehicle exports. But the real growth has taken place to other African markets, with Africa as a whole accounting for 22% of light vehicle exports by value in 2012. If we consider all automotive exports, Africa looks set to overtake North America as the second largest regional market for South African automotive exports after Europe.

Component Exports

As indicated in Table 4, component exports have expanded dramatically. From a low base of R3.3 billion in 1995, component exports expanded to R44.1 billion in 2008 before declining to R36.9 billion in 2012. A key objective of the import-export complementation scheme under the MIDP was to assist component suppliers generate high volumes which would make them more efficient, and able to compete in the domestic market against imports. A linked objective was that reduced production costs would have the added benefit of providing lower input cost into the assembly industry. The objective of higher component volumes was certainly achieved at least in the sense that export development was usually accompanied by higher volumes and specialisation. Many component producers rationalised their product lines.

However, the nature of export expansion has raised two concerns. Firstly, there is the issue of the implications for the overall integration of the industry particularly given the profile of products being exported. Secondly, there is the question of the sustainability of the rapid export expansion that has taken place.

Table 4: Major component export categories, 1995-2012 (R million)

	1995	2005	2012	% of 2012 total
Total	3,316	23,000	36,867	100.0
Catalytic converters	389	9,935	16,347	44.3
Engine parts	102	1,000	2,875	7.8
Silencers/Exhausts	76	492	1,730	4.7
Stitched leather seat parts	1,019	2,693	1,719	4.7
Tyres	213	1,183	1,522	4.1
Radiators and parts	66	220	945	2.6
Automotive tooling	153	332	782	2.1
Transmission shafts/cranks	55	553	771	2.1
Engines	9	781	559	1.5
Road wheels and parts	157	738	466	1.3
Other	1,077	5,073	9,151	24.8

Source: AIEC (2013); DTI.
Note: The 'other' parts figure includes parts of parts, which are not identified as being specific to a particular component.

The profile of component exports and implications for industry integration

A wide range of components were exported under the MIDP. In 2012 there were no less than 23 component categories for which exports were R100 million or more. But a striking feature is the large share of total exports taken up by a few component categories. Catalytic converter exports alone

amounted to R16.3 billion (44.3% of component exports) in 2012. From the early years of the MIDP, catalytic converters have been the product of choice for carmakers wanting to generate import credits. From the perspective of multinational carmakers wanting to rapidly generate exports, catalytic converters offered a number of advantages. Global demand for catalytic converters was expanding rapidly due to environmental legislation, which their platinum content makes catalytic converters high value products.

In 1995 the industry supplying leather seat covers accounted for 30.7% of total component exports and continued to grow rapidly until the early 2000s, but has since declined. Over the period, South Africa supplied the bulk of BMW's global automotive leather requirements and was an important supplier to a number of other foreign vehicle manufacturers. Major export categories such as catalytic converters, silencers/exhausts and stitched leather seat parts could be described as 'peripheral' in the sense of being relatively minor components, which have high raw material content and are not particularly complex in terms of incorporating large numbers of sub-components.[13] The bulk of export expansion has, therefore, not been by 'traditional' component suppliers but by a rapidly emerging new group of mainly foreign owned firms frequently with links to vehicle manufacturers.[14] Relatively light investments with a low level of integration into the domestic industry, either in terms of supply to domestic vehicles or in terms of the use of sub-components, have been one outcome. Because exports account for the vast share of output in most of these cases, domestic consumers (either assemblers, first tier suppliers or the aftermarket) did not receive the benefit of reduced costs due to economies of scale. It could be argued, therefore, that local assemblers in conjunction with their multinational parents developed large component export businesses, which did not contribute to the more integrated development of the automotive industry.

However, the argument that the profile of component exports is dominated by a few categories needs to be qualified. Firstly, if the growing volume of vehicle exports is included in the export profile, the picture looks very different. Vehicle exports averaged only 18.3% of total exports for the years 1995-96 but this share had increased to 56% by 2012. Vehicles are high value added products and include a wide range of locally produced components. Secondly, while a substantial shift in the profile of exports has taken place over the last few years and the proportion of total exports accounted for by a small number of products has increased, it is not clear that this has all been in the direction of low value added components. Most notable among the growth of high value added, complex components was the expansion of engines and engine parts, which by 2012 generated exports of R3.4 billion.

[13] The visiting chief executive of a major carmaker referred disparagingly to them as "salami".

[14] Similar trends have been observed in other countries experiencing rapid international integration and export expansion such as Brazil (Posthuma, 1995) and Argentina (Miozzo, 2000).

Sustainability

A second key question concerns the sustainability of the large fixed investments and export volumes established. Sustainability under a regime of falling assistance, is a function of cost factors such as labour, materials and logistics but also depends on more dynamic attributes such as scale of production (in relation to minimum efficient scale) and the rate of productivity improvement over time.

Even though the catalytic converter industry is capital intensive, this is in part due to high working capital requirements as a result of the high value of platinum group metals (PGMs), which are integral to the production process. Early investments in the sector gave the impression of being somewhat footloose. Only limited segments of the total production process were carried out in South Africa. Initial investment involved the establishment of plants, which undertook the coating and canning of the imported ceramic substrates. The pace of expansion increased following the signing of a number of very large contracts from 1999 to 2000 and by 2005 South Africa was producing approximately 14% of total world supply. The industry reached sufficient critical mass to justify backward integration beyond the relatively simple coating and canning processes, with the two world leaders in ceramic substrates, Corning and NGK Insulators, establishing plants in South Africa to undertake the cutting and baking of the substrate. However, they failed to make the very large investments required for substrate production. In addition, there was significant investment in ancillary industries such as flexible connections, matt manufacture and manifold, exhaust system and silencer assemblies.

Automotive leather is a very labour intensive process and shares some of the attributes of the notoriously footloose garment industry. However, in this sector too, the value chain was increasingly embedded with the development of world class capabilities ranging from tanning of high quality leathers to JIT logistics. While exports remained substantial, they declined from R3.1 billion in 2008 to R1.7 billion in 2012. This was due to a number of factors. BMW and Mercedes Benz moved contracts to Eastern Europe even though the tanneries there also source a proportion of their automotive wet blue grade hides from South Africa.[15] Automotive policy issues also played a role. When the MIDP first came under scrutiny as an export subsidy under the WTO, it was the Australian government, under pressure from domestic producers of automotive leather that first threatened to challenge the policy. While the APDP only came into effect in 2013, its basic parameters were clear some years earlier and affected investment decision making, leading vehicle producers to diversify away from South Africa as a source. Under the APDP vehicle and component producers earn production credits but highly export oriented sectors of the

[15] This section draws on telephonic interview with Dawie Bezuidenhout, JAG on Automotive Interiors (JALI), December, 2013.

component industry had support levels much diminished, even though they were included in the category of 'vulnerable industries'.

Investment

The supply response to the realignment of domestic and international prices is a key variable determining the impact of liberalisation and this in turn hinges on investments made by firms. When imports are liberalised, it is possible that profit margins will fall in the short term and this could impact negatively on both the motivation and capacity to invest in the industry. While profits are declining in a more competitive market, there is clearly the risk of investment being reduced and gradual attrition taking place leading eventually to plant closure. However, the investment behaviour of the assemblers has been influenced by a number of industry specific factors. The importance of economies of scale means that the increased competitive temperature places some pressure on firms to increase production as a way of reducing unit costs. This in turn may require that the parent company creates export opportunities for the South African subsidiary and invests accordingly. Investments have to be enlarged or firms face the prospect of losing market position and eventually becoming unviable. Thus the situation that faced the local assemblers and their parent companies in the mid to late 1990s was akin to a game of poker - to stay in the game the stakes had to be increased.[16] Given that the key investment decisions are made outside South Africa by the global parent, short term profitability in a minor South African subsidiary has been a lesser consideration than medium term market prospects and strategic concerns related to market share and the requirements of global production networks.

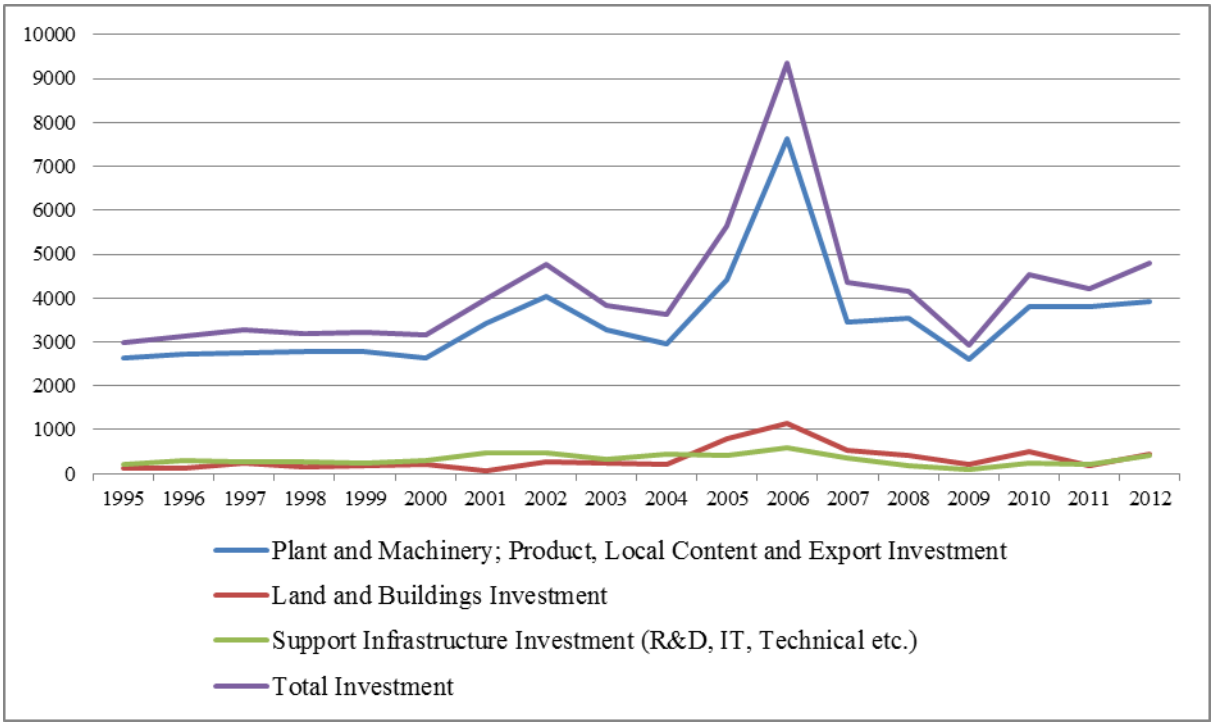
While inflows of foreign direct investment into the South African economy have been moderate during the tenure of the MIDP, the automotive sector has been a significant recipient. But much of this FDI involved the purchase of partial or full ownership by Ford (in Samcor), Toyota Motor Corp. (in Toyota SA), Nissan Motor Corp. (in Nissan SA) and General Motors (in Delta).

Fixed investment by vehicle manufacturers increased slowly after the trough of the mid-1990s, when political and policy uncertainty together with a weak domestic market led to a serious slump in new capital expenditure. All firms have modernised and expanded their plants and firms such as Toyota and VW now have the capacity to produce at world scale. But as Figure 6 shows, in real terms there has only been a modest increase in investment in vehicle manufacture, apart from the spike in 2005-2006. In 2012 rands, capital investment in 2010-2012 averaged R4.5 billion which is hardly an impressive increase on

[16] At the time of TMC's purchase of a 27.8% stake in Toyota (South Africa), Shinji Sakai a senior managing director of Toyota Motor Company stated that "since the freeing of South Africa's economic system we are seeing more competition and we need to enhance our strength". See 'Toyota Japan to buy chunk of its local carmaker in a move to boost output' (*Sunday Independent*, 13 October, 1999).

the low base of just over R3 billion for the first 3 years of the MIDP. The investments made in plants have continued to lag, both in a quantitative and qualitative sense, behind the massive investments that have been made in booming emerging market industries in Brazil, Thailand, China, India and central Europe over the last two decades.

Figure 6: Investment expenditure by vehicle manufacturers, 1995-2012 (R million, constant 2012 prices)

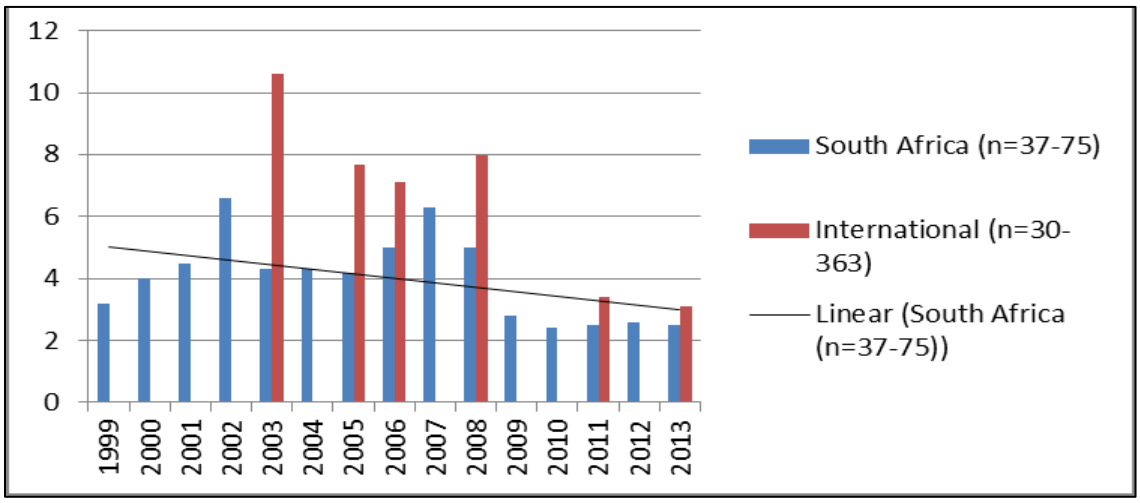


Source: Duxbury, (2013), NAAMSA Annual Reports (various years)

There has also been some expansion in investment in the component sector, while FDI has played an increasingly important role. While there have been a number of greenfield investments, the takeover of existing firms has accounted for a large share of FDI (Gelb and Black, 2004). Since 2000, growing investment has taken place in first tier suppliers locating close to assembly plants with vehicle export projects, but many of these involve assembly type operations with limited local content. As is the case with vehicle assembly, investment levels have been modest. South African Automotive Benchmarking Club (SAABC) data for the automotive components industry, shows that average capital expenditure in the South African industry consistently lagged investment levels amongst international competitors from the late 1990s (Figure 7). Average investment levels breached six percent of sales in only two years of the

15-year period, indicating consistently depressed levels of investment in the supply chain – even during the 'boom years' of the industry from 2001-2006.

Figure 7: Capital expenditure as a percentage of sales in benchmarked component firms



Source: SAABC database

Productivity, competitiveness and employment

Economic theory would attribute growing exports by multinational corporations from a developing economy such as South Africa, to efficiency seeking FDI targeted at taking advantage of the comparatively low cost structure of the developing economy. Yet this was patently not the case under the MIDP. The boom in exports evident over the period of the MIDP was largely driven by the import-export complementation scheme, and hence by the strategic intent of exporting firms to earn sufficient import credits to offset their duty exposure in the domestic market. This does not mean that the South African automotive industry did not improve its competitiveness under the MIDP. The evidence for both vehicle assemblers and automotive component manufacturers is unequivocal in this regard. Automotive industry productivity in the early 1990s was very low in South Africa and improved rapidly. Data collected by the International Motor Vehicle Programme based on detailed assembly plant surveys conducted in 1994 and 1996 showed that the average South African assembly plant compared poorly with assembly plants in other countries.[17] The main reasons for this were ascribed to low levels of automation and the complexity of most assembly plants, which produced a range of models in relatively low volumes. A crude measure of assembly plant productivity is to measure vehicle output per employee. This increased from 9.7 in

[17] Unpublished data, International Motor Vehicle Programme.

1995 to 14.5 in 2005 and 16.9 in 2012.[18] At the same time, a number of South African assemblers, such as Mercedes Benz and BMW, have received international awards for the quality of the vehicles sold in export markets.

An important factor impacting on assembly plant productivity has been increased specialisation with a reduction the number of models produced. For example the number of passenger car models being domestically produced fell from 21 in 1995 to 12 in 2005 and seven in 2012. This was accompanied by a substantial increase in average model volumes, which in turn also encouraged higher levels of automation. Improved operational competitiveness drawing on lean production principles has also played a role (Black and Barnes, 2003).

Data from the SAABC for automotive component manufacturers reveals a very similar picture. Whilst not strictly comparable from one year to the next due to constantly shifting participation in the SAABC, the average performance standard of automotive component manufacturers improved markedly over the period 1998/1999 to 2012 (

[18] While these data provide a good estimate of productivity improvements they underestimate the number of vehicles produced per worker as they include only light vehicles but all employment, including in commercial vehicle production.

Table **5**). For each of the seven metrics analysed, the performance of the set of South African firms benchmarked annually improved markedly over the period. For certain Key Performance Indicators (KPIs) performance improved very significantly. For example, customer return rates improved from 3,270 parts per million (ppm) in 1998/9 to 254 ppm in 2006 to 226 in 2012, an improvement of 93.1%.

Notwithstanding these improvements, the major competitiveness challenge for the South African automotive components industry over the duration of the MIDP appears to have been four-fold.

First, the industry improved its performance off a weak base in the late 1990s. While it may have closed some of the gap on international performance standards by 2012, it remained some distance behind in certain performance areas. Examples of this in

Table **5** include customer return rates, internal scrap rates, and absenteeism. Despite improving by 93.1%, 59.5% and 31.8% respectively from 1998/9 to 2012, South African performance standards lagged that of the international firms (located in India, Central Europe and North America) benchmarked in 2012 for the three measures.

Table 5: Competitiveness improvements in the performance of the South African automotive components industry, 1998/9 to 2012, and international comparisons

Market driver	KPI	South African performance standards					International standard 2012, n=26-59	SA vs. International standards, 2012
		1998/9, n=23-27	2001, n=23-27	2006, n=61-75	2012, n=29-36	Change 1998/9-2012		
Cost control	Inventory holding (operating days)	62.6	42.0	33.3	26.2	58.1%	24.5	-6.5%
Quality	Customer return rate (ppm)	3,270	1,240	254	226	93.1%	199	-11.9%
	Internal reject rate (%)	4.9	3.9	2.6	1.7	65.3%	1.6	-5.9%
	Internal scrap rate (%)	4.2	3.5	2.8	1.7	59.5%	1.5	-11.8%
Reliability	OTIF delivery reliability to customers (%)	92.2	92.7	93.5	97.7	6.0%	97.9	-0.2%
	OTIF delivery reliability from suppliers (%)	78.7	82.2	90.0	92.5	17.5%	93.3	-0.9%
Human Resources	Absenteeism – lost hours (%)	4.4	4.0	3.3	3.0	31.8%	2.6	-13.3%

Sources: Barnes and Morris (2008), SAABC database, accessed January 2014

Second, the South African automotive industry's international benchmarks have changed significantly over the duration of the MIDP. The automotive components industry has become fully internationalised over the last two decades. Multinational organisations with global production strategies now dominate the first two tiers of the automotive supply chain. They have the capability to discern the best locations for their new production facilities at a global level, and focus their investments on these locations. Mid, and high-cost production locations have lost out in the process. The only exceptions to this relate to instances where (a) the volumetric profile of components produced renders them expensive to trade across long distances, (b) sub-assemblies need to be supplied to vehicle assemblers on a Just in Time or Just in Sequence basis, or (c) trade barriers prevent the supply of the components across national economies. This internationalisation has resulted in an intensification of competitive pressure across the automotive supply chain, forcing price discipline and significantly improved performance across a range of critical non-price factors, such as inventory management, quality, reliability, flexibility, and innovation. In an ongoing review of the declining Australian automotive industry[19], by the government's Productivity

[19] The Australian automotive industry represents an interesting counterfactual to the South African industry. The Australian government aggressively reduced industry tariffs under the 'Button Plan' (from 27.5% in 1995 to 15% in 2001), and then to only 5% in 2010 under the Automotive Competitiveness and Investment Scheme (ACIS). This liberalisation has resulted in vehicle production dropping to less than 200,000 units, with all three remaining vehicle assemblers (Ford, Holden and Toyota) confirming the closure of their Australian plants by 2017. The

Commission, it is for example noted that the price of the Toyota Camry in the United States reduced by 1% per annum in real terms over the decade to 2010, while at the same time having $1,400 worth of additional safety, fuel efficiency, and quality improvements made to the vehicle (Productivity Commission, 2013: 17). These cost adjustments have been countered by a relentless search for savings in both assembly and component costs.

Third, several leading automotive producer countries in 2012, such as China, India and Thailand, did not feature as major global competitors in 1995. These economies have the advantages of large domestic markets, major regional market opportunities, cheap production costs, and growing technological capabilities. In combination with the internationalisation of the automotive components industry, these economies have fundamentally changed the international automotive landscape. A recent comparison of the competitiveness of the South African and Thai automotive components industries from 2008 to 2013 (Barnes, Black and Tekachanont, 2014) revealed the extent of the gap between the two countries. In spite of the fact that Thai employee costs were much lower, manufacturing standards were superior in areas such as cost control, quality performance and operational flexibility. In addition, Thai operating overheads such as electricity (3% cheaper) and water (16%) were considerably lower than in South Africa. Only factory rentals were cheaper in South Africa (by 9%). Based on a model of a typical automotive component manufacturer in South Africa, the Thai operating cost advantage was calculated at 14%, given the same levels of production output as evident in South Africa.

In a presentation given to the members (mostly automotive component manufacturers) of the Durban Automotive Cluster in 2013, Toyota South Africa management highlighted the magnitude of the change by identifying the cost challenges facing South African suppliers to Toyota. According to Toyota's calculations, the average cost of their South African sourced components was 107-110 on their Cost Index of Manufacture (CIM) in 2013, with China at 91, India at 85, and Thailand at 92. Yet, the performance of the 'traditional' competitors on Toyota's CIM averaged 100 in Europe, much closer to average South African levels.

A further problem in South Africa has been the steep increases in factor costs. While the industry has become more efficient, and is operating closer to acceptable global operating standards, the input costs into operations have climbed steeply. This is evident for energy costs, municipal service costs (solid waste removal, water, etc.) and taxes, labour costs, skilled staff costs, and national government administered prices, such as port charges. In combination, these costs have rendered the automotive

reasons provided for the plant closures by the MNCs is the lack of their competitiveness in the face of Asian cost benchmarks and the ease of accessing the Australian vehicle market from these economies.

industry substantially less competitive than leading automotive production economies such as Thailand (Barnes, Black and Tekachanont, 2014). The recent depreciation of the rand will have reduced the gap to some extent.

Another major objective of the MIDP was to maintain employment during the process of restructuring. Total employment in the vehicle manufacturing industry (assembly and components) increased quite strongly from 104,100 in 1995 to 112,300 in 2005 and then declined to 100,159 in 2012. While cyclical factors especially the impact of the global financial crisis have an important effect on employment levels, assembly plant employment has declined significantly since 1995. A degree of rationalisation, as well as outsourcing of certain activities previously performed in-house, account for this.

Table 6: Employment in the Automotive Sector, 1990-2012

	Assembly	Component	Tyre	Motor trade	TOTAL
1995	38,600	65,500	11,000	178,000	293,100
1996	38,600	65,600	10,000	180,000	294,200
1997	37,100	69,100	9,500	180,000	295,700
1998	33,700	69,700	9,100	170,000	282,500
1999	32,000	67,200	6,670	175,000	280,870
2000	32,300	69,500	6,575	180,000	288,375
2001	32,700	72,100	6,300	182,000	293,100
2002	32,370	74,100	6,000	185,000	297,470
2003	31,700	75,000	7,200	191,000	304,900
2004	31,800	74,500	7,200	194,000	307,500
2005	34,300	78,000	6,800	198,000	317,100
2006	39,000	80,000	6,900	199,000	324,900
2007	38,300	81,800	6,800	201,000	327,900
2008	35,900	74,000	6,200	200,000	316,100
2009	30,100	61,000	5,700	203,000	299,800
2010	28,128	65,000	6,600	200,000	299,728
2011	28,147	68,500	6,500	200,000	303,147
2012	30,159	70,000	6,500	200,000	306,659

Sources: NAAMSA Annual Reports (various years); Automotive Export Manual (various years)

There has also been significant rationalisation of sections of the component sector. Greater specialisation within firms in many cases led to job losses. A typical scenario would be the replacement of multiple lines using labour intensive methods with more automated and specialised production of a lower number of products. However, South African component suppliers have in many cases retained their flexible, low volume capacity in aftermarket production. In the component sector, where there have been declines in employment in 'traditional' suppliers, the rapid growth of exports has had a positive impact on employment especially in labour intensive sub-sectors such as automotive leather and wiring harnesses. But the problems in automotive leather over the last decade have adversely affected employment in a sub-

sector that at its peak employed several thousand workers. The largest component export sector, catalytic converters, is highly capital intensive and generates relatively few jobs in relation to the huge values of exports being generated. The tyre sector has been extensively rationalised and employment has declined sharply.

It is important to note that the motor trade (servicing, distribution etc.) employs far more people than manufacturing. This has grown over the period, along with increasing car sales and a larger vehicle population. Lower vehicle prices partly as a result of trade liberalisation have also played a role.

The transition to the Automotive Production and Development Programme

The 2007-2008 review of the MIDP, which led to its termination in 2012, and the subsequent establishment of the APDP in 2013, was shaped by three streams of government and broader stakeholder concern. The first related to the MIDP's potential challenge at the World Trade Organisation, with at least two national governments raising questions as to the status of the MIDP in respect of South Africa's compliance with the WTO Agreement on Subsidies and Countervailing Measures. It was broadly accepted by all stakeholders that the MIDP was a potentially actionable subsidy, and that formal action against the MIDP was likely within the WTO unless its termination was announced and a more compliant policy framework created. Second, the distortions of the MIDP, which were principally created through the materials-inclusive calculation of export-based benefits, were of major concern to government, NUMSA and NAACAM. Low local content levels in exported vehicles were largely attributed to the ease of earning import credits through the export of 'peripheral' components such as catalytic converters. Correcting these types of unintended MIDP consequences was a major objective of the review process.

The brief of the 2007/2008 review was therefore to replace the MIDP with a WTO compliant development programme in 2013 that corrected the market and associated production distortions of the MIDP, and that was of similar overall benefit to the South African automotive industry. The 2007/2008 review was riven with tension from the outset. A number of the vehicle assemblers were in the process of planning the replacement of their locally manufactured models and demanded confirmation of government support prior to finalising the extent of their investments. This led government to provide verbal guarantees to the industry in respect of support levels post 2012. These guarantees were then used to influence the review process. The recommendations put forward by the review committee allowed for ongoing support for investment through the Productive Asset Allowance (now the Automotive Investment Scheme), replacing the domestic market only DFA with a market-neutral Volume Assembly

Allowance (VAA), and implementing a WTO-compliant, market-neutral Production Incentive in place of the export-oriented IRCC scheme.

The recommended architecture of the APDP was largely accepted by the industry, although intensive lobbying then took place to upwardly adjust the proposed levels of support within each of the support areas included within the new programme. As a result, significant changes were subsequently made to the programme. This included an increase in the VAA from a recommended 15% to 20%, the inclusion of certain standard materials in the calculation of value addition through domestic supply chains (e.g. platinum, leather and non-ferrous metals), and the declaration of certain component manufacturing sub-sectors as 'vulnerable' and therefore deserving of additional transitional support. The standard applied rate of the Automotive Investment Scheme also increased. The adjustments made were meant to ameliorate the costs associated with the transition of the industry from the MIDP to APDP operating environment, but they provided additional support in the form of Import Rebate Credit Certificates (now called Production Rebate Credit Certificates) that again make it far too easy to import vehicles into the South African market.

The APDP, which became operational in January 2013, is therefore only partly aligned with the factors that drove its establishment. While it is more aligned with the rules of the WTO, some of the distortions of the MIDP were not decisively dealt with (evident in the recognition of certain standard materials as local value addition), while the benefit afforded to the industry is potentially too generous, resulting in the continued expansion of vehicle imports which incur minimal duty, and limited pressure on vehicle assemblers to increase their local content levels.

5. CONCLUSIONS AND POLICY IMPLICATIONS

In the early 1990s, the South African automotive sector was widely regarded as inefficient and uncompetitive, and ultimately dependent on heavy protection for its existence. South Africa was far from major markets and the small domestic market showed little sign of growth. In the face of the prospect of globalisation, the prognosis for the industry was poor.

The period 1995-2012 has been a phase of rapid change. This paper has sought to assess how policy has impacted on industry structure and how this process has been mediated by the strategic decision making of foreign and domestic firms. The long term performance indicators presented suggest a fairly positive development picture given the fact that the industry has been located in an underperforming economy. To date the costs of liberalisation have been quite low. The share of imports has grown sharply but there has

been a very rapid increase in exports of both vehicles and components. Investment, including foreign investment has increased, albeit at a modest pace. Significant rationalisation has reduced the extreme proliferation of makes and models being assembled in very small, uneconomic volumes. While there has been some employment loss, the automotive sector has not fared badly compared to manufacturing as a whole. Vehicle prices have also declined in real terms although they remain higher than in most first world markets. Quality and productivity have improved significantly. So although the sector remains assisted, its structure is more robust, more competitive and more oriented to global markets.

However, policy has also produced distortions, encouraged uneconomic investments and led to unforeseen side effects. These impacts limit the gains that have been made and have caused complications in the transition process to the APDP. One of the most striking changes has been the rapid growth in exports and imports. The level of export assistance has been far too high, especially at the start of the MIDP. The orientation of the industry changed fundamentally away from its focus on the small domestic market. In fact it became 'ultra-export oriented'[20]. Growing exports facilitated specialisation and the achievement of economies of scale. But as yet this has had only a limited effect in terms of increasing 'economic' local content. More evident, especially in the early stages, was the expansion in exports of 'peripheral' components. The result was the growth of a large component export sector, which was not integrated with the low volume, low local content assembly industry supplying the domestic market. Another important effect of rapid export expansion was the increasing ability to rebate import duties, which added significantly to import pressure on the industry.

Greater international integration has led to growing foreign investment and ownership. The assembly sector is now completely foreign owned as is a large portion of the component sector. Foreign ownership has facilitated access to global networks. With few exceptions, domestically owned component firms neither possessed the technological capability to become independent first tier suppliers nor had ambitions in this direction. Many have been forced to reposition themselves as second tier suppliers, but may have gained from being reintegrated into the supply chain with much higher volumes.

The investments now being undertaken are generally on a larger scale than was the case previously and the industry is in a stable position with tariffs no longer declining under the APDP. Nevertheless, investments have in fact been quite modest in relation to most other major developing country vehicle producers. It is clear that there has been a substantial hedging of bets, for example, in the initial reluctance to make major investments in the assembly sector. It is apparent too, in the somewhat footloose nature of

[20] This is a relative term as a number of countries export a greater share of their automotive production. This refers to the orientation of the trade regime and the fact that, as a result of the MIDP, South Africa exports a high share of output given its remote location.

investments in key component export sectors such as automotive leather and catalytic converters. The supply chain remains underdeveloped and heavily reliant on imports. Essentially, the evidence presented does not indicate that South Africa is en route to becoming a major new production hub or export platform for the global automotive industry.

There are a number of lessons for industrial policy:

1. *The industry was liberalised too rapidly* – A growth in imports was expected and was absolutely necessary to increase competition in the domestic market, as well as to allow for specialisation by domestic producers. However, it was too rapid and too extensive and this has undermined the prospects of the industry. This was not so much a problem of tariffs being lowered too far but more the result of the ease with which import duties could be offset.

2. *A value chain perspective is essential* – In a producer driven value chain, the incentive structure needs to impact directly on producer firms. This was the case in the MIDP and the vehicle producers were in a position to orchestrate the rapid expansion of exports. It follows that in a buyer driven value chain like garments, it may make sense to target the large buyers, as opposed to the producers more directly.

3. *Long term, credible incentives impact on firm behaviour* - The establishment of a clear and transparent incentive structure encouraged multinational firms to make large long term investments. Before long, this formerly decrepit industry was exporting luxury cars to Japan. One lesson is that an appropriately designed incentive structure could be used to encourage more employment intensive growth in the manufacturing sector.

4. *Policy changes should be predictable and gradual* – Long term policy certainty is of extreme importance to investment decision making. Gradual policy changes are necessary because firms have fixed investments and cannot adjust overnight. The export incentives under the MIDP were too generous and led to a dramatic and sometimes costly shift from import substitution to an ultra-export orientation. This then also led to a more rapid increase in imports than expected.

5. *Intervening to affect market outcomes has its place but requires a solid rationale* – More prescriptive measures should have been used to encourage model rationalisation. However, dis-connections between policy-induced and market-based outcomes can lead to adverse distortions and side-effects.

Finally, where does this leave the industry with regard to future policy support? Should government continue to support the industry and if so on what basis and for what reason? It is argued that the MIDP has cost the South African government (and hence taxpayers) many billions of rands. Why not reduce protection further and transfer support to more deserving sectors? After all, vehicles have been assembled in South Africa for nearly a century and the sector can hardly be characterised as an infant industry. Furthermore, there is little evidence to date that South Africa is becoming an export hub.

These questions must be answered and it is difficult to argue the case for ongoing high level support without providing an explanation of how greater dynamic comparative advantage might be developed and the gap reduced in relation to low cost rival producer countries. In this regard, three major points can be made.

1. The level of assistance provided the industry is frequently overstated and in any event was greatly reduced under the MIDP. The MIDP itself was a significant policy reform, with its support levels and tariffs declining substantially from 1995 to 2012. The figures put out by National Treasury of budgetary assistance to the tune of R8 to R10 billion per annum are simply incorrect. They are based on South African Revenue Service (SARS) data on the import duties offset by exporting. However, if duties were not offset, imports would clearly be much lower. The ability to offset duties moreover reduced costs and increased imports. Consumers received access to lower cost vehicles and much greater choice. In fact our view is that the industry has been excessively liberalised in the sense that import credits were too easily earned under the MIDP. Making this more difficult would have curbed imports to some degree and been positive for automotive manufacturing and for the trade deficit. According to the Treasury calculus, this would amount to reduced support to the industry.

2. While the industry is not competitive with the lowest cost producing countries, it is much more efficiently structured and competitive than it used to be. This is evident in the more efficient industry structure, in productivity and quality improvements, and in the modernisation of plants. All this has been achieved with minimal dislocation in terms of major plant closures or employment losses.

3. The question remains as to what would enable the industry to catch up with the lowest cost producers. Historically, the Achilles heel of the South African industry has been its distance from major markets. South Africa has never constituted a viable ‘automotive space’ – which requires either a large domestic market, proximity to such a market or membership of a regional grouping

that collectively constitutes such a market. Africa is now the world's fastest growing region and is also characterised by extremely low rates of vehicle ownership. Sales are growing dramatically even though a high percentage of these new additions to the African vehicle population are used imports, mainly from Japan. Projections for economic growth and the increase in the size of the middle class point to massive expansion in vehicle ownership over the next few decades. The question is where will these vehicles be produced? With appropriate industrial policy arrangements together with ongoing regional integration it is possible to envisage the emergence of new poles of growth for the automotive industry alongside South Africa - in countries such as Nigeria, Kenya, Ethiopia and Egypt. Indeed, booming conditions in most the countries to the north means that South Africa has suddenly become well located as a production location for the last major untapped global market. If policy is appropriately managed there are considerable opportunities for long term growth.

The conditions for successful development of the automotive industry in developing countries remain the same as they always have been – a viable 'automotive space', ongoing improvements in competitiveness and the ability to attract investment and appropriate trade and other policies. With the booming market in the region, substantial efforts to improve competitiveness (both inside and outside the factory) and appropriate policies to regulate competition as well as our links to the region, the South African automotive industry has the potential for unprecedented growth over the next few decades. All the attributes are in place – good infrastructure, established firms and production capabilities, affordable wages - and now the prospect of a booming regional market. Government and industry stakeholders need to work towards achieving this objective.

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