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**Policy In The South African Motor  
Industry:  
Goals, Incentives, And Outcomes**

Anthony Black

University of Cape Town

Shannon Mitchell

Virginia Commonwealth University

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## **ABSTRACT**

Since its inception, the development of the South African motor industry has been significantly affected by a range of government policies. Earlier policies of heavy protection have been replaced by a system, which encourages export orientation. This paper examines the impact of these developments by providing an analytical framework in which policy changes can be assessed. Earlier policies of import substitution imposed high costs on consumers and also led to an inefficient industry structure. More recent import-export complementation policies have encouraged export expansion and a degree of specialisation. But outcomes will depend on the extent to which new export activity is sustainable at lower levels of assistance.

## **NON-TECHNICAL SUMMARY**

The paper first outlines the history of industrial and trade policy in the industry. It highlights the significance of the transition from import-substitution policies to export promotion policies. It then provides an analytic exposition of the welfare costs and benefits of the current export complementation programme. We find that:

- a) The current policy creates rents in the industry that are borne by South African motor vehicle consumers;
- b) These rents accrue to vehicle assemblers, vehicle importers and components manufacturers;
- c) The exact method of phasing down the programme will affect the size of these rents;
- d) Some of the "new" exports of components under the MIDP may be uneconomic in the sense that they would not cover costs in the absence of the MIDP--this hurts welfare;
- e) Whether or not components exports are economic, the programme encourages larger scales of production, thereby reducing costs. This last effect could be large enough to outweigh the welfare losses associated with any uneconomic exports of components.

## **1. INTRODUCTION**

More liberal trade regimes have been a feature of trade policy for developing countries over the last few decades. This policy shift was driven by the general desire to reduce the costs of protection and more specifically to limit anti-export bias and hence encourage export expansion. However, developing countries seeking to liberalise trade faced difficult challenges as industries established under import substitution policies were frequently uncompetitive. This was nowhere more apparent than in scale intensive industries where a small domestic market size had led to the establishment of plants operating at well below minimum efficient scale. A classic example is the automotive industry where high tariffs coupled with local content requirements typically produced a market structure characterised by a large number of small-scale plants, frequently producing a wide range of models at low volume. Generally, exports were minimal.

The expansion of automotive exports was increasingly seen as the solution both to rising trade deficits in the sector and as a route to establishing volumes sufficient to enable firms to reach efficient scale. Many developing countries, South Africa included, thus opted to liberalise. Tariffs were reduced and local content requirements were either relaxed or abolished. In most countries where the automotive industry was well established, policy went further to include some form of export support, generally through a trade balancing or import-export complementation mechanism. The rationale was to encourage exports in order to reduce net foreign exchange usage but also to increase the level of specialisation and thereby achieve economies of scale. These policy changes clearly entailed a radical redefining of the incentive structure facing firms and the purpose of this paper is to examine, in the South African context, how policy tried to meet these objectives, the impact on the incentive structure facing firms and the outcome of these policies.

## **2. BEFORE 1960**

The first South African car assembly plants were established in the 1920s and protected by high tariffs. The domestic industry thus developed mainly as an assembly industry to service the needs of the local market. Demand grew rapidly over the course of several decades, and the industry developed many small-scale plants with high unit costs. In addition, each plant was producing a number of different models, and in some cases different makes as well, contributing further to the high costs of production (See Table 1).

**Table 1: Number of assemblers, models produced and vehicle sales**

<b>Phase of Local Content Programme</b>	<b>No. of assemblers</b>	<b>No of models</b>	<b>Vehicle sales</b>
Phase I (1961)	8	24	119 000
Phase II (1970)	16	43	298 000
Phase III (1976)	13	39	300 000
Phase V (1987)	7	20	309 000

Source: Black (1994)

The market could best be described as monopolistically competitive, as evidenced by the large number of models produced and the small-scale plants with excess capacity. While profits might have been earned over operating costs, these would have been dissipated by the costs of capital and developing new models. As demand grew, new models were introduced. Thus while the import tariff effectively prevented competition by imported vehicles, there was nonetheless a high degree of competition among domestic assemblers in the form of the introduction of new models. The relatively small scale of the domestic market led to high prices.

### **3. LOCAL CONTENT REQUIREMENTS**

By 1960, the South African economy was increasingly constrained by a shortage of foreign exchange. This is not an uncommon occurrence in countries with widespread import substitution policies, since the policies themselves draw capital into import-competing sectors at the expense of potential export sectors and result in an anti-export bias. Cars were for the most part assembled locally from imported components, with just 20 percent local content at this time.

The policy response was to impose a local content requirement<sup>1</sup>. Starting in 1961, a series of local content programmes was introduced. By 1971, which marked the end of the second phase of the programme, manufacturers were required to have 52 percent local content, as measured by the weight of the local components. Assemblers not meeting the local content requirement would be subject to a prohibitively high tariff on imported parts. This quickly led to the emergence of a domestic components industry. The small size of the market meant these firms ran small-scale plants operating at high average costs. By 1977 local content was required to reach 66 percent for cars and this was extended to light commercial vehicles in 1982.

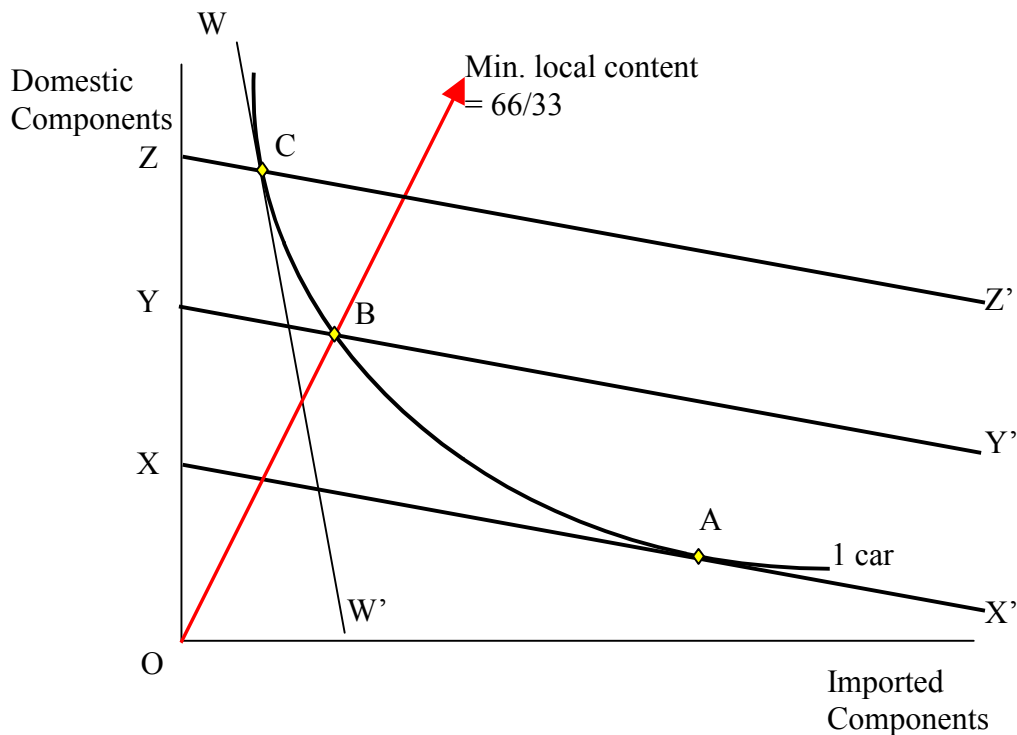
Figure 1 shows the effects of this policy. The curve CA represents an isoquant for a typical firm producing a car using imported and domestic components.<sup>2</sup> While motor vehicle production also requires inputs of labour and capital, this isoquant holds these constant and focuses on the trade-off between the imported and domestic parts. The line XX' has a slope equal to the free trade relative price of imported to domestic parts. Point A then represents the cost-minimizing combination of imported and local components when imported parts face no discrimination, and OX represents the cost of making a car in terms of world prices.

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<sup>1</sup> For more detail on the policy background see Bell (1990), Black (1994) and Duncan (1997).

<sup>2</sup> The quantity studied is arbitrary in the sense that the results derived will hold for any chosen level of output, provided the isoquant is convex.

Figure 1: The effects of the minimum local content requirement



The local content requirement of 1977 established a minimum local content of 66 percent of the weight of the vehicle. The slope of ray OB represents the 66 percent local-to-33 percent imported minimum requirement for motor producers. The figure depicts this as a binding constraint, since we know that at the time of implementation in 1961 only about 20 percent of components were domestically produced. The line YY' is parallel to XX' and therefore OY shows the cost of making a car (in terms of world prices) under the local content requirement. The requirement increased the cost of producing a motor vehicle in South Africa by forcing manufacturers to buy high-cost local components, as can be seen by comparing OY to OX. As a way of trying to minimize the effect of the new requirement, manufacturers of autos generally chose to source heavier components, such as the car's frame, locally.<sup>3</sup>

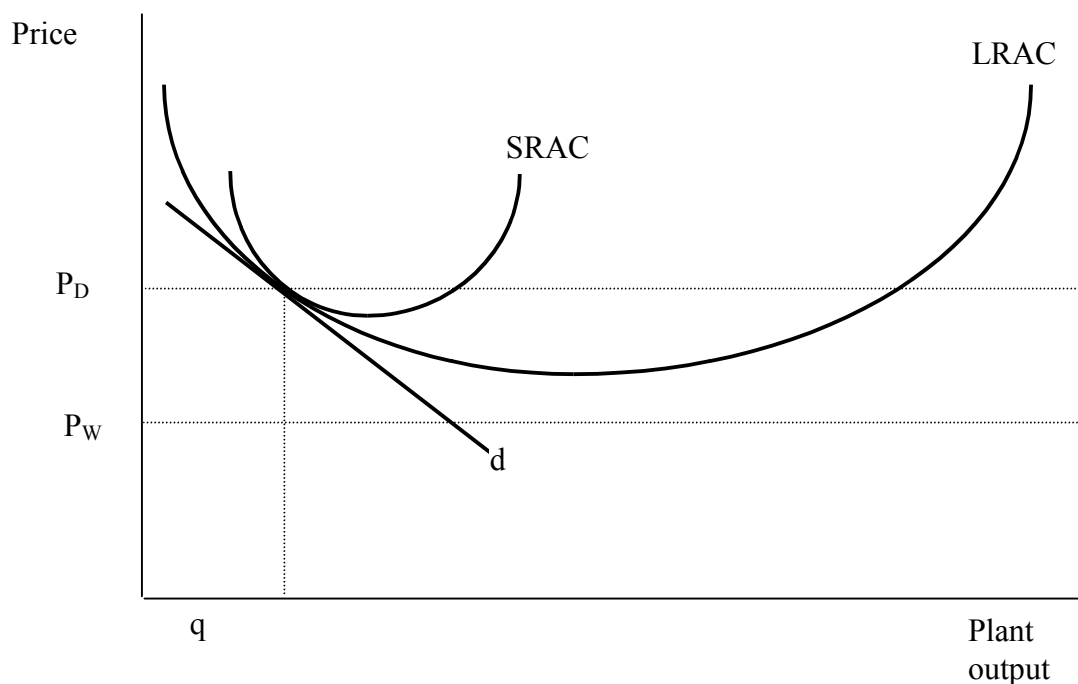
As an alternative to meeting the minimum local content requirement firms were given the option of paying a tariff on imported components. The slope of WW' represents the tariff-ridden relative price of imported to domestic parts, with C being the least-cost combination when imported components are subject to the tariff. OZ represents the cost of producing a car under the tariff, and this is shown as being prohibitively high to reflect the fact that, in practice, all firms met the local content requirements.

Another justification for local content requirements was the desire on the part of policymakers to see a reduction in the number of models produced, since that would presumably lead to greater scale economies and lower prices in the market. Figure 2 depicts the situation of one firm in equilibrium in a monopolistically competitive market. The figure shows short-run average cost (SRAC) and long-run average cost

<sup>3</sup> The figure measures components in terms of units rather than by weight and thus does not depict this additional distortion.

(LRAC) for a typical plant, with a domestic price higher than the world price of a similar model. The low scale of output explains why the domestic price is shown well above the least possible LRAC. In addition, South Africa was unlikely to have had a comparative advantage in motor vehicle manufacture at this point in time and therefore the world price of motor vehicles is shown below South Africa's least possible LRAC. The monopolistic competition model predicts that an increase in average costs will result in short run losses in the industry until some models are discontinued. As the number of models shrinks, demand for each remaining model will grow. This will continue until zero profits are once again established in the market. Since the local content requirement increased variable costs to South African firms, one could reasonably have expected it to achieve the desired result of reducing the number of models being made.

**Figure 2: The monopolistically competitive vehicle manufacturing industry**



In fact, this was not observed. In the decades following the implementation of the local content requirement the industry saw a further increase in the number of models produced domestically. Rising incomes had led to such a strong increase in demand for vehicles that the industry was not forced to consolidate models. Instead, the number of models actually expanded through 1970. It was only later that the industry saw some rationalisation, perhaps due to slowing demand growth and the increased local content requirement from 52% to 66% in 1977 (See Table 1).

#### **4. PHASE VI**

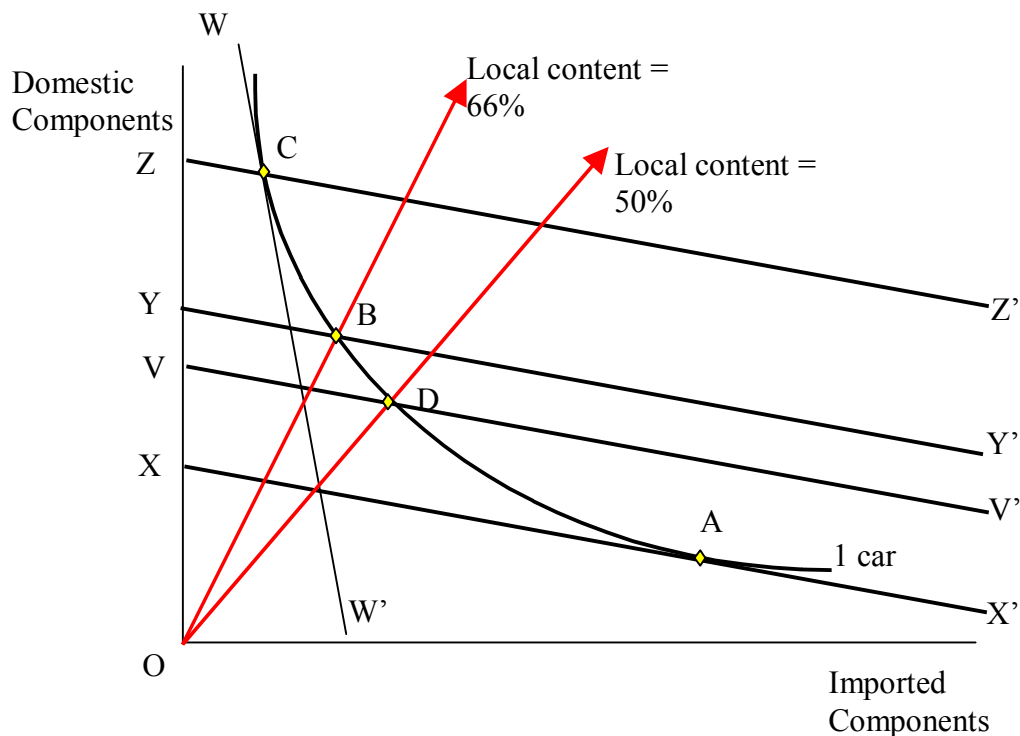
The next major change in direction of policy came in 1989 with Phase VI of the local content programme. Inasmuch as import substitution policies had by this time fallen out of favour in development circles, one of the aims of the new policy was to move away from import substitution and toward export promotion policies. Accompanying

this was the recognition that in this industry foreign exchange difficulties might be eased as much through exporting as in limiting imports. The changes allowed for the local content target to be achieved not just by the value of domestically produced components fitted to locally assembled vehicles but on a net foreign exchange basis. In other words, exports of components or vehicles counted as local content and enabled an assembler to reduce actual local content in domestically produced vehicles. In addition, the actual local content requirement was reduced from 66 percent to 50 percent.

It was hoped that an increased incentive to export would, in effect, expand the size of the relevant market for firms, leading to increased rationalization in both the built-up vehicle and components markets. Low scales of production and the accompanying high unit costs were still perceived to be a problem for both sectors. The result of the policy change was the rapid expansion of exports in the components sector, with little response initially in the completely built-up (CBU) sector.

Figure 3 shows the effect of Phase VI on the costs of motor vehicle production. Ray OD represents the new, lower minimum local content requirement, and OV measures the new, lower cost of production in international terms. VY is then the potential cost savings to a firm under Phase VI compared to Phase V. However, in order to secure the 50 percent constraint firms had to either export output or purchase export credits from another source, both costly activities. Nonetheless, producers found it worthwhile to secure the 50 percent local content requirement rather than pay duties. Exporting components generated a valuable credit that created a new incentive for component firms to export, and they duly responded.

**Figure 3: The effects of reducing the minimum local content requirement**





Even though one of the goals of Phase VI was to rationalize production it resulted in exactly the opposite: a proliferation of new domestic models. This was because under Phase VI the effective rate of protection increased as high nominal tariffs rates on built up vehicles were maintained while protection on the component sector fell sharply as the local content requirement was relaxed and assemblers were increasingly able to rebate import duties on components.

## **5. MOTOR INDUSTRY DEVELOPMENT PROGRAMME**

Dissatisfaction with the results of Phase VI led to the introduction of the Motor Industry Development Programme (MIDP) in 1995. Key features of the MIDP were:

- (a) Reduced tariffs on light vehicles and components, with tariffs being phased down even faster than required by WTO obligations;
- (b) Removal of local content requirements;
- (c) Duty-free import of components up to 27 percent of the wholesale value of the vehicle;
- (d) Duty rebate credits to be earned on exports of vehicles and components and used for duty-free import of vehicles and components.

The industry has already changed noticeably with the implementation of the MIDP. Imports of vehicles surged dramatically, many of them brought in using duty-free credits. Likewise, exports of vehicles have increased, particularly for certain manufacturers, and component exports have continued to grow. Domestic manufacturers seem on the whole to prefer previously established, local sources of components for previously introduced models, but there is some indication that newly introduced models will rely more heavily on imported components. In 2000, 95 percent of the value of imported components came in duty free.<sup>4</sup>

For the first time, policymakers were using import competition to rationalize the industry. The threat of cheaper imports led to cost-cutting measures in domestic firms. In addition, there is some evidence of rationalization (see Black, 2001).

While the MIDP put pressure on vehicle manufacturers in terms of sales prices, it provided relief in the form of several measures which cut their costs, including reduced tariff rates on imported components, the duty-free allowance for components, the possibility of additional duty rebates on components, and the removal of local content requirements. It is thus not clear how the effective rate of protection has changed although rising imports would indicate that it has declined significantly.

Finally, the export complementation scheme was expanded in size and scope. Under Phase VI, export complementation was limited, since there was a minimum local content requirement of 50 percent. With the MIDP there is no corresponding limit. Given that exports are assisted by complementation arrangements, which will be phased down over time<sup>5</sup>, there are concerns regarding the sustainability of export expansion. There is also a concern that the objective of achieving economies of scale in component manufacture and thus reducing costs to domestic assemblers may also

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<sup>4</sup> Calculated by the authors based on data in tables 18 and 19 in van Seventer (2001).

<sup>5</sup> See Republic of South Africa (1999) for the details of the extension of the MIDP to 2007.

not be achieved because of the huge expansion in the export of ‘peripheral’ components. The concern is that vehicle manufacturers are embarking on strategies to generate import credits by exporting components especially in products that require only minimal investments. This would allow them to continue to introduce new low volume models into the domestic market utilizing imported components. To some extent this strategy has been adopted as a lower cost route to duty neutrality, certainly much easier than increasing local content in low volume locally assembled vehicles. In the first few years following the introduction of the MIDP these concerns seemed to be borne out by the relatively slower growth of vehicle exports. However, light vehicle exports have increased from 18 500 units in 1997 to 108 000 units in 200, leading also to significant investment in the component industry.

## 6. WELFARE ANALYSIS

We now turn our attention to the remaining price distortions in the market and the welfare effects of the MIDP.

### 6.1 Price Distortions and Rent Creation in the Market for Imported Cars

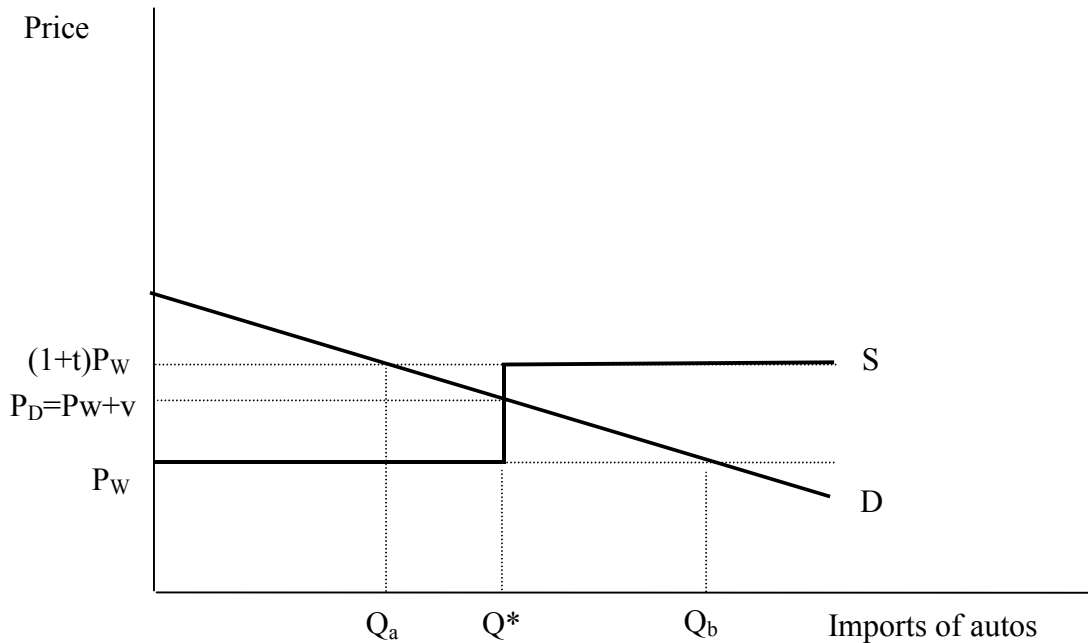
While in some respects the MIDP appears to be moving the industry in the direction of free trade, significant price distortions remain. For example, consider the price of an imported car. It might seem that since many cars are able to come into the market without paying duty (due to export credits) that the imported cars will be sold at world prices. In fact, this is unlikely to be the case unless there are more export credits available than desired. To see this, consider Figure 4. Panel *a* shows the market for imported cars, given  $Q^*$  is the maximum number of vehicles that can be brought in duty-free using export credits. Let  $t$  represent the tariff rate on imported vehicles and  $P_w$  be the world price. Then the supply curve will be perfectly elastic at  $P_w$  up to  $Q^*$ . It is perfectly inelastic at  $Q^*$  up to  $(1+t)P_w$ , where it becomes perfectly elastic once more. Let  $Q_a$  and  $Q_b$  represent the quantities demanded at the prices  $(1+t)P_w$  and  $P_w$ , respectively. The figure shows the case when sufficient credits are earned that all imported cars come in duty free, but not enough credits are earned to force the domestic price  $P_d$  all the way down to the world price. In other words,  $Q_a < Q^* < Q_b$ . Importers will earn rents equal to  $(P_d - P_w) Q^*$ .<sup>6</sup>

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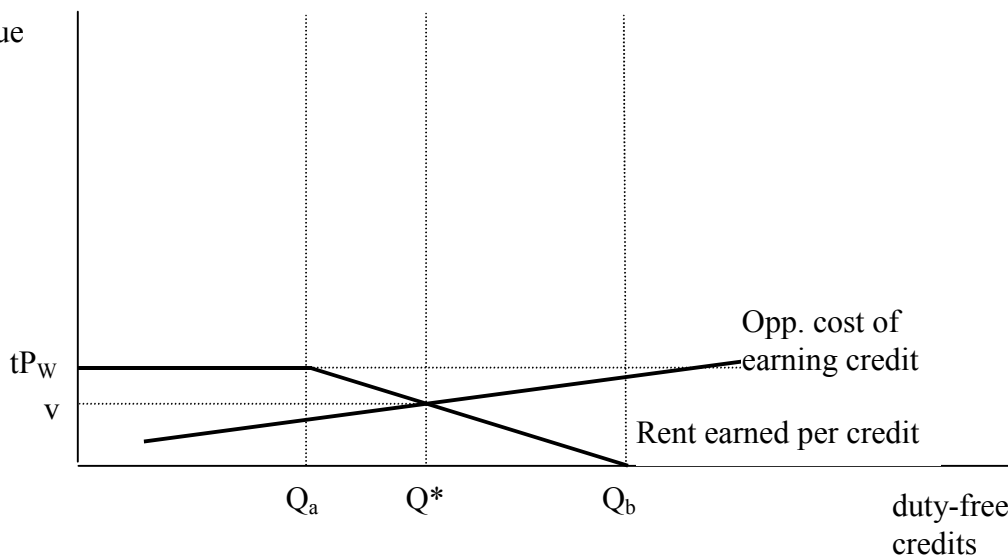
<sup>6</sup> Some or all of these rents may ultimately be paid to components producers, as discussed below.

**Figure 4: The determination of duty-free credits and the market for imported cars**

*Panel a: The market for imported cars*



*Panel b: The determination of duty-free credits earned*



Panel *b* shows how the number of import credits earned,  $Q^*$ , is determined. For low levels of credits, the value of an additional credit (or demand) is equal to the tariff revenue it saves per car,  $tP_w$ . The demand for credits is perfectly elastic at  $tP_w$  up to the quantity  $Q_a$ . Beyond  $Q_a$ , the rent earned per credit declines (following the shape of the demand for imported cars in panel *a*) until no rents are earned from importing cars at  $Q_b$  since  $P_d = P_w$ . Duty-free import credits are earned by exporting cars or components, and it is assumed that there is an increasing opportunity cost to doing so. This leads to an upward sloping supply of credits curve. Exporters will continue to

earn credits as long as the marginal rent is greater than the opportunity cost. In panel *b* of Figure 4, the equilibrium quantity occurs along the downward-sloping portion of the demand curve, though this need not always be the case, as is discussed below. Each credit has a value  $v$  and the total value of rents created by the export complementation scheme is  $vQ^*$  (this is equal to  $(P_d - P_w)Q^*$  in panel *a*).

Two other cases are possible. First, suppose that the opportunity cost of earning credits was much higher, so that the supply of credits curve in panel *b* lies to the left of where it is shown. Then  $Q^*$  would fall on the perfectly elastic portion of the demand curve and credits would be worth  $tP_w$ . Likewise, the “step” in the supply curve in panel *a* would occur at this new  $Q^*$ , which would be less than  $Q_a$ . The domestic price of imported cars would reflect the full amount of the tariff, which is currently 40 percent. Importers would earn rents equal to  $tP_wQ^*$  and the government would collect tariff revenue equal to  $t(Q_a - Q^*)$ .

The other case is when the opportunity cost of earning rents is much lower than the case depicted. Then the supply of credits curve will lie further to the right, let us say so far that the value of a credit is zero. This would be more likely when exporting components and cars is profitable in its own right, so that no added incentive to export is needed. In panel *a* the “step” in supply would occur to the right of  $Q_b$ , the domestic price of imported cars would equal the world price, importers would earn no rents, and the government would collect no tariff revenue.

Many of the cars being imported into South Africa at present are speciality vehicles, with relatively few imports of ordinary vehicles. The current tariff rate on imported vehicles is 40 percent. Because imported cars in South Africa are typically selling above world prices but not a full 40 percent above world prices, we think that Figure 4 reflects the current situation on most models. This suggests that the limit on export credits is binding, and that vehicle importers are earning rents on imports.<sup>7</sup>

Figure 4a depicts the demand for imported vehicles as a whole, but we could more properly think of separate graphs of demand for each model of vehicle imported. Importers will choose to use their export credits on the models that earn the most rents for them, thus ensuring that the rents per vehicle imported will be equal on all imported models.

## 6.2 Phasing Down Assistance

Figure 4 can be used to clarify an interesting policy question, namely, "What is the best way to phase down assistance to the industry?" First consider a tariff reduction. Beginning in panel *b*, as  $t$  falls,  $Q_a$  will increase so that the kink in the "rent earned per credit" curve slides down and to the right. This has no effect on either the rent earned per import or the number of credits earned until  $tP_w$  falls to the initial value of  $v$  (or  $Q_a = Q^*$ ). At this point the price of imported vehicles will be equal to the world price plus the tariff. But once the tariff per unit falls below the initial value of  $v$  then  $Q^*$  and  $v$  will both fall. The domestic price of imported cars will fully reflect the

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<sup>7</sup> In 2000, for example, 86 percent of the value of imported vehicles came in duty-free. Calculated by the authors based on data presented in van Seventer (2001).

tariff rate, i.e.,  $P_D = (1+t)P_w$ . Turning our attention to panel *a*, the initial effect of reducing tariffs will be to shift down the flat portion of the supply curve beyond  $Q^*$ . Once  $(1+t)P_w$  falls below the initial  $P_D$ ,  $Q^*$  (and the kink in the supply curve) will shift leftward as the tariff falls. Domestic prices of imported cars will fully reflect the tariff, but as the tariff falls, these prices fall. As established in panel *b*, there will be fewer duty-free credits. The number of imported cars will rise (due to falling domestic prices), increasing consumers' surplus. Government tariff revenue collected may rise or fall, depending on whether the reduction in the tariff rate is offset by the fact that tariff revenue will be collected on more units.

Another way to phase down assistance is to reduce the credit earned per unit of export. This will increase the opportunity cost of earning credits, shifting this curve upward and to the left in panel *b*. This reduces the number of credits earned  $Q^*$  but increases the rent created by each one. Whether there is an increase or decrease in the total value of rents created depends on the elasticity of demand. If the credits earned per export are cut enough then  $Q^*$  will fall to  $Q_a$  and the rent earned per credit  $v$  will equal  $tP_w$ . If the credits earned per export are reduced further, then  $Q^*$  will fall below  $Q_a$  but  $v$  will remain equal  $tP_w$ , which will reduce the total rents earned. In panel *a*, the "step" in the supply curve will shift leftward as  $Q^*$  falls, increasing the price of imported cars. Once  $Q^* = Q_a$  the price of cars will remain the same in the face of further reductions in  $Q^*$ .

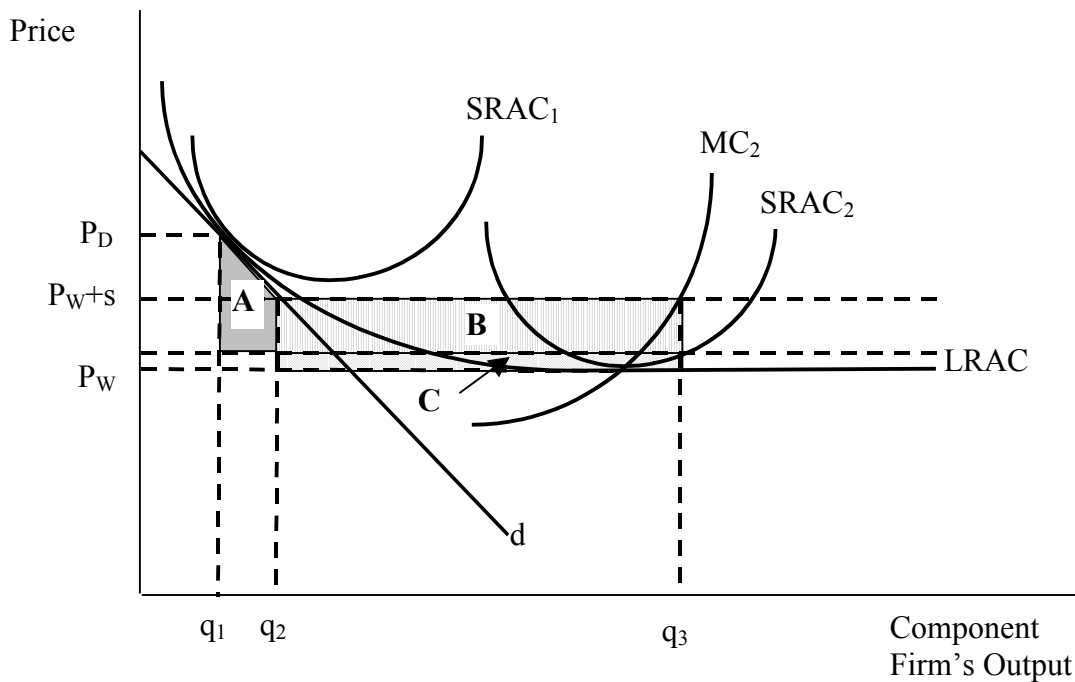
In comparing these two methods of phasing down assistance, cutting tariffs has an advantage over reducing the credits earned per export. The former moves the domestic price of cars in the direction of world prices and ultimately reduces rents, while the latter moves the domestic price of cars away from world prices and may or may not reduce rents.

### 6.3 Exports, Import Credits and Economies of Scale in Components

We now turn our attention to how the MIDP affects the components manufacturing sector. The first question is, does the export credit mainly force firms to explore potential markets abroad for the first time, resulting in exports that would be economic even without the export credit? Or, does it stimulate firms to export goods at an economic loss?

Figure 5 shows the situation of a components manufacturing firm for which exporting is an economic activity, albeit unexplored in the absence of the export credit. The firm faces economies of scale followed by constant returns to scale over the relevant range of output. The world price of similar components is assumed in this case to be equal to this firm's lowest LRAC. The curve *d* represents domestic demand for this component by domestic assembly firms. Prior to the export credit policy this firm used plant size 1 with  $SRAC_1$  to produce  $q_1$  units that it sold domestically at  $P_D$ .

Figure 5: Export complementation in the case when exports are economic



The export credit policy induced it to seek international buyers for its product. It scaled up its operations to plant size 2 with  $SRAC_2$ . It sells its exports at the world price. Each unit exported also generates an export credit with a positive market value. For the time being, assume that the component firms can sell credits for their full value,  $v$ . While  $v$  was denominated in terms of the value of the credit per imported vehicle, let us now introduce  $s$  which represents the market value of the export credit, expressed in terms of components exported. Then the firm faces a perfectly elastic demand for its output at price  $P_W + s$  and produces  $q_3$ . Domestic demanders buy  $q_2$  and  $q_3 - q_2$  is exported. The policy was designed with the idea that exports would allow these firms to better take advantage of scale economies, and the welfare benefits of this effect can be seen by trapezoid  $A$ . The upper triangle of  $A$  represents additional consumer surplus (to domestic car assemblers) arising from increased consumption at lower prices and the lower rectangle represents rents accruing to the component producer owing to cost savings.  $A$  thus represents the benefits of economies of scale to domestic assemblers and the component producer.

Rectangle  $B$  shows rents earned by the component producers stemming from their ability to extract rents from the downstream motor vehicle assemblers. This is ultimately borne by South African consumers. Note that these components are being exported at price  $P_W$ , which is less than the average cost of production. This loss is shown by rectangle  $C$ . The firm is willing to accept this loss because it can sell its export credits for  $B + C$ . But while  $B$  is a transfer from carmakers to component makers,  $C$  is a deadweight loss to the economy. To see net welfare gains or losses we must compare the efficiency gains of  $A$  against the deadweight loss  $C$ . While these

appear to roughly balance as drawn in Figure 5 this is merely a coincidence, and in actuality there might be large net welfare gains or losses.

Our analysis so far has assumed that components firms are able to extract the highest possible price from downstream manufacturers, capturing all of  $vQ^*$ . But components firms may not be very successful at bargaining with the manufacturing firms, which are often much larger, international firms. Discussions with industry suggest that component producers do not receive the full 'price' for their credits. In part this reflects the bargaining power of assemblers, who are likely to be key customers. There are also instances where payment may take the form of facilitating access into the international networks of the domestic assembler's parent company.

How does bargaining power affect the welfare analysis? Suppose, for the sake of example, that the components firms are only able to negotiate a price for their components that extracts half of the downstream firms' cost savings. Figure 5 shows that the changes are more than simply distributional. First, the implicit subsidy per unit produced,  $s$ , will be lower, and the domestic price of components will fall. This will increase the welfare gains to consumers of components (who are vehicle manufacturers),  $A$ , and reduce the deadweight losses,  $C$ , making it more likely that there will be net welfare benefits from the export credit program.

We began with the notion that this is an example of "economic" exports, and yet the analysis indicates that these exports are occurring below average cost. We reconcile this discrepancy by noting that once the policy has introduced components producers to foreign markets then the export credit policy could be discontinued. Firms would then face a perfectly elastic demand for their output at  $P_W$  and they could continue to export at that price since it covers their average costs. The welfare benefits of increasing the scale of production (shown as  $A$ ) would continue and be larger whereas the welfare losses (shown as  $C$ ) would disappear.<sup>8</sup> This seems to be the intent of the programme—to give experience in exporting and to increase the scale of operations.

Recall that many of the components exports initiated under the MIDP consist of new firms that produce entirely for the export market. For this type of exporter there is no domestic demand curve and therefore there are none of the gains of  $A$ . In this instance, then, the export credit results in exports below average cost, causing welfare loss  $C$ , which comes at the expense of South African vehicle consumers and taxpayers. When there are no domestic consumers of the components it is especially important that export complementation be used to initiate economic exports but be discontinued without delay, since these exports are made at a net welfare loss.

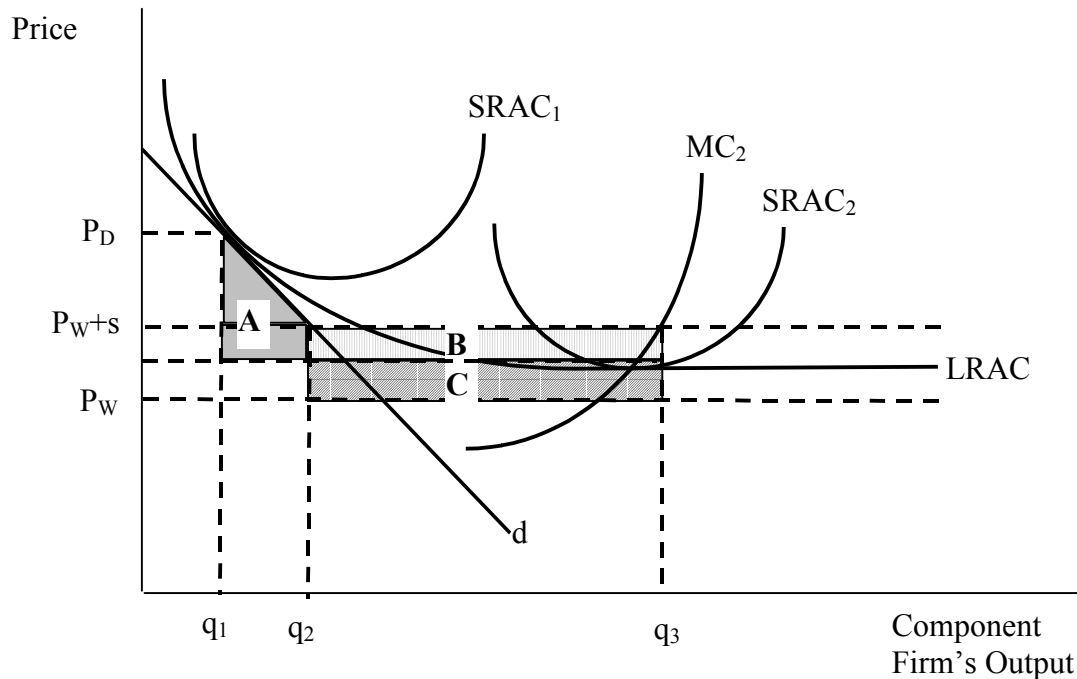
This raises the issue of uneconomic exports, shown in Figure 6. The key difference between this case and the last is that the world price of components is shown to be below the lowest achievable average cost for South African components. No matter how much output might expand, South African firms would not be competitive. Area  $A$  again represents gains achieved by expanding output,  $B$  continues to represent rents captured by components producers and  $C$  is still the welfare cost of exporting below

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<sup>8</sup> The area of  $A$  would be larger. With firms facing a lower marginal revenue curve they would cut back production to the point where  $MC$  crosses  $LRAC$ . The firm will price at marginal cost (equal to  $LRAC$ ). Domestic consumers thus move down their demand curve to  $P_W$ , and  $A$  will be a triangle lying under the demand curve between  $P_D$  and  $P_W$ .

the opportunity cost of production. The net welfare impact still depends on the relative size of the gains of *A* as compared to the losses of *C*. However, in this case the exports are driven entirely by the export credit policy. Exports would cease if the credits ended.

**Figure 6: Export complementation in the case when exports are uneconomic**



A key question, then, is whether higher volumes will enable exporters to reduce average costs at least as low as the world price, although it is important to note that welfare gains can be realised even when short run average costs are above world prices provided domestic assemblers see reduced prices for domestic components (as when  $A > C$  in Figure 6). Under Phase VI, export expansion was very rapid. From negligible levels in the mid 1980s, component exports grew to approximately R1 200 million in 1992 and R3 300 million by 1995. This rapid expansion has continued under the MIDP with component exports growing to R12 600 million in 2000 (Department of Trade and Industry, 2001). A prime objective of the import-export complementation scheme was to assist component suppliers to increase volumes, which would make them more efficient and able to compete both in export markets but also in the domestic market against imports. While this objective has to some extent been achieved, the bulk of the export expansion has not been by ‘traditional suppliers’, who developed under the earlier local content programmes, but by a rapidly emerging new group of mainly foreign owned firms, frequently with links to vehicle manufacturers.<sup>9</sup>

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 subcomponents, have been one outcome. Much of the expansion in exports has been in a small range of products, some of which could be described as ‘peripheral’. For

<sup>9</sup> Similar trends have been observed in other countries experiencing rapid international integration and export expansion such as Brazil (Posthuma, 1995) and Argentina (Miozzo, 2000).



example 52% of total component exports in 2000 were accounted for by stitched leather covers and catalytic converters (Department of Trade and Industry, 2001) both industries which have developed mainly as a result of the import-export complementation policy and for which the domestic market was negligible, nullifying the gains in consumer surplus evident in Figures 5 and 6. On the other hand both of these sectors have become large- scale industries in global terms and have been able to reduce their costs through high volume output and the local establishment of ancillary suppliers, which is justified by higher volumes. Although a few component categories accounted for a large share of overall export expansion, a wide range of components is also exported in increasing volumes. In many of these cases what firms have tended to do is to reduce their product line and specialise, thus reducing their costs and increasing exports in a narrow range of parts. This type of response took place in important export categories such as automotive glass, radiators and engine parts. There is also considerable evidence of cost saving operational improvements by component firms resulting from greater economies of scale, the demanding requirements of export markets as well as simply lower import protection (Barnes, 1998).

## **7. CONCLUSION**

The incentive structure facing firms in the South African automotive industry has shifted dramatically as policy has moved from heavy protection to liberalisation combined with export support. This paper has sought to provide a framework to analyse these shifts on the behaviour of firms and on welfare more generally.

Protection clearly imposed important costs directly on consumers but in a scale intensive sector such as the automotive industry these costs can be greatly compounded by the emergence of a low volume, high cost industrial structure, which has frequently characterised the protected automotive industry in developing economies. The introduction of Phase VI and later the MIDP led to a radical realignment of the incentive structure. Apart from the tariff reductions that have taken place, allowing exports to offset import duties has led to a much more export oriented industry.

While the expansion of exports has been dramatic, the welfare implications of this are less clear. We have tried to show that under certain assumptions, the cost reductions resulting from higher volume production can be welfare enhancing even where costs remain above world prices. But outcomes depend crucially on the extent to which exports are economic or become economic over time. There are a number of key considerations here. Firstly, the extent to which exports lead to greater economies of scale and hence lower costs are an important factor. A second determinant is the extent to which learning effects and the development of ancillary industries or what we could term agglomeration effects reduce costs over time. Thirdly, the expansion of exports of assembled products (most obviously vehicles but also complex components such as engines) creates high volume demand for sub-components, which may then be produced competitively by domestic suppliers. So, to the extent to which this occurs, export assistance may carry positive externality effects. More intangibly, the MIDP has encouraged international firms to incorporate South African

subsidiaries and licensees into the global networks that determine the vast majority of trade flows in this sector.

The current policy, which runs until 2007, aims to phase down assistance to the industry in two main ways. Firstly, tariffs will continue to fall, thereby reducing protection but also reducing assistance to exporters because rents earned will fall as the duty declines. Secondly, the policy is also designed to reduce assistance to exporters by phasing down the credits earned per unit of export. As we have indicated above, this measure will, other things being equal, raise protection in the domestic market. It is important, therefore, that policy makers ensure that the balance of instruments used is aligned with their objectives.

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