LOCAL CONTENT PROTECTION IN THE MOTOR VEHICLE INDUSTRY IN SOUTH AFRICA

ABSTRACT

The paper assesses the effects of local protection, applied to the South African motor vehicle industry, on resource allocation, the balance of payments, economic growth, employment and other variables in the South African economy. It critically evaluates each phase of local content protection in relation to trends in the sales of new vehicles, the output of components and the size of the labour force employed in the assembly and component manufacturing industries. The paper also looks at whether the motor vehicle industry in South Africa under local content protection has experienced high costs of production than its overseas component suppliers due to low productive efficiency or failure to achieve economies of scale.

Pursuing this point the paper examines the consequences of having many makes and models in the South African motor vehicle industry. Information from the board the of trade and industry reports, the then Central statistical services (now Stats SA), the National Association of Automobile Manufacturers of South Africa (NAAMSA), and the National Association of Automotive Component and Allied Manufacturers of South Africa (NAACAM), will be used to establish what has happened over time as local content targets were implemented by the motor vehicle industry.

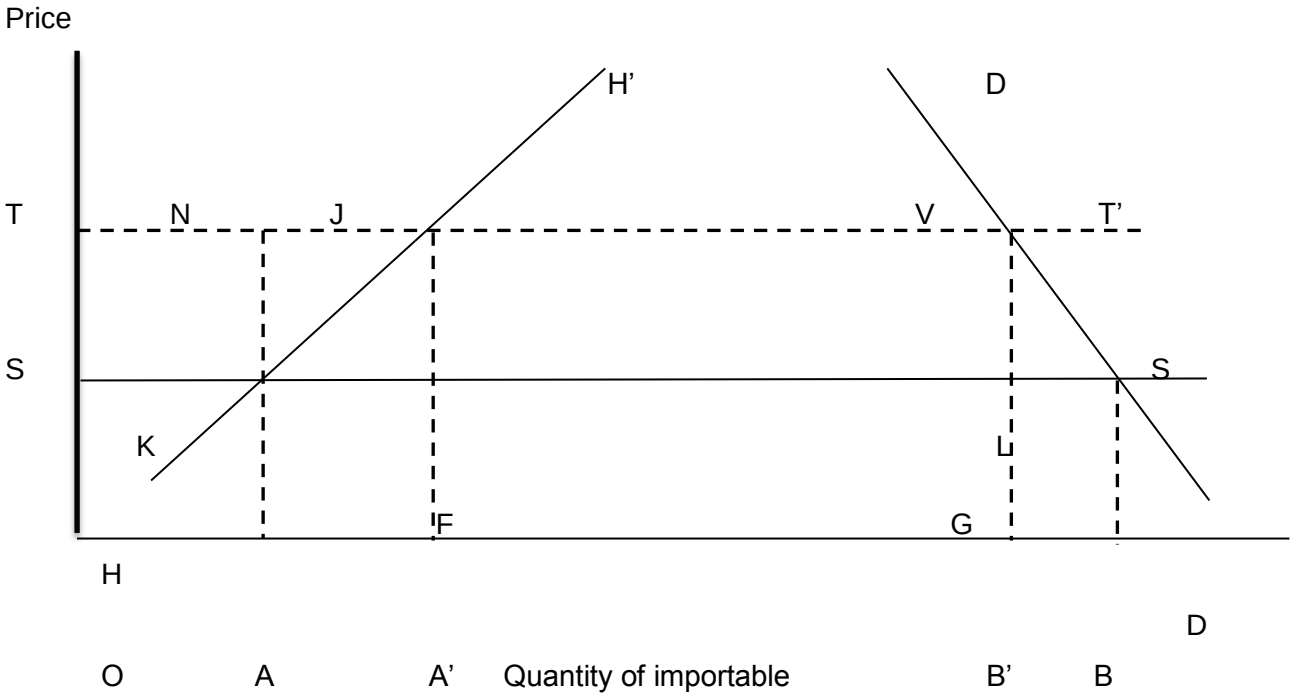
Duncan (1992) claim that growth in the component sector took place after local content requirements were introduced. Bell (1990) indicated employment levels of 37 000 for assemblers in 1989, and 60 000 for components. The Board of Trade and Industry (1988) reported that the excess cost of local sourcing due to content protection have been much smaller than commonly supposed. This view was supported by Bell (1990) who noted that " local sourced components comprising 70 percent of the weight of the average small car actually cost less than they would have if imported by an amount equal to 8,3 percent of the excise value of such vehicle. The conclusion is that local content protection benefited the South African motor economy by boosting the local original equipment manufacturers (OEMs), employment and the exports of South African manufactured cars.

1. IINTRODUCTION

This section focuses on the cost of trade protection and how it causes misallocation of resources in the economy. A standard diagrammatic analysis will be used to show the loss of free trade benefits, or the cost of protection in the presence of a tariff and local content

requirements. Assume a small open economy which is a price taker in international trade, but decides to introduce a tariff of ST per unit on some imports of some commodity. Assume the local industry producing this commodity is competitive, and has supply curve HH'. Demand for the commodity in this open economy is shown by DD'. Figure 1 demonstrates that in the initial free trade equilibrium, consumers buy OB at the price OS, determined by the foreign supply curve SS. Domestic producers supply OA' and imports are AB.

Figure 1 NET NATIONAL LOSS FROM A TARIFF



Source: WM Corden (1971), P.5 (1)

An import tariff of ST per unit raises domestic price to OT, and result in consumption contracting to OB'. Domestic producers supply OA' at the higher price, and imports are reduced to A'B'. The government receives ST of tariff revenue on each imported input or FJVG in total revenue. Welfare gains and losses as measured by consumer and producer surpluses resulting from the tariff are as follows (gains indicated by (+), losses by (-)).

The tariff lowers overall national welfare by the sum KJF and GVL, and transfers STJK from consumers to producers and FJVG from consumers to government. STJK now represent producer surplus and FJVG in revenue from the tariff. The two areas of social loss KJF and

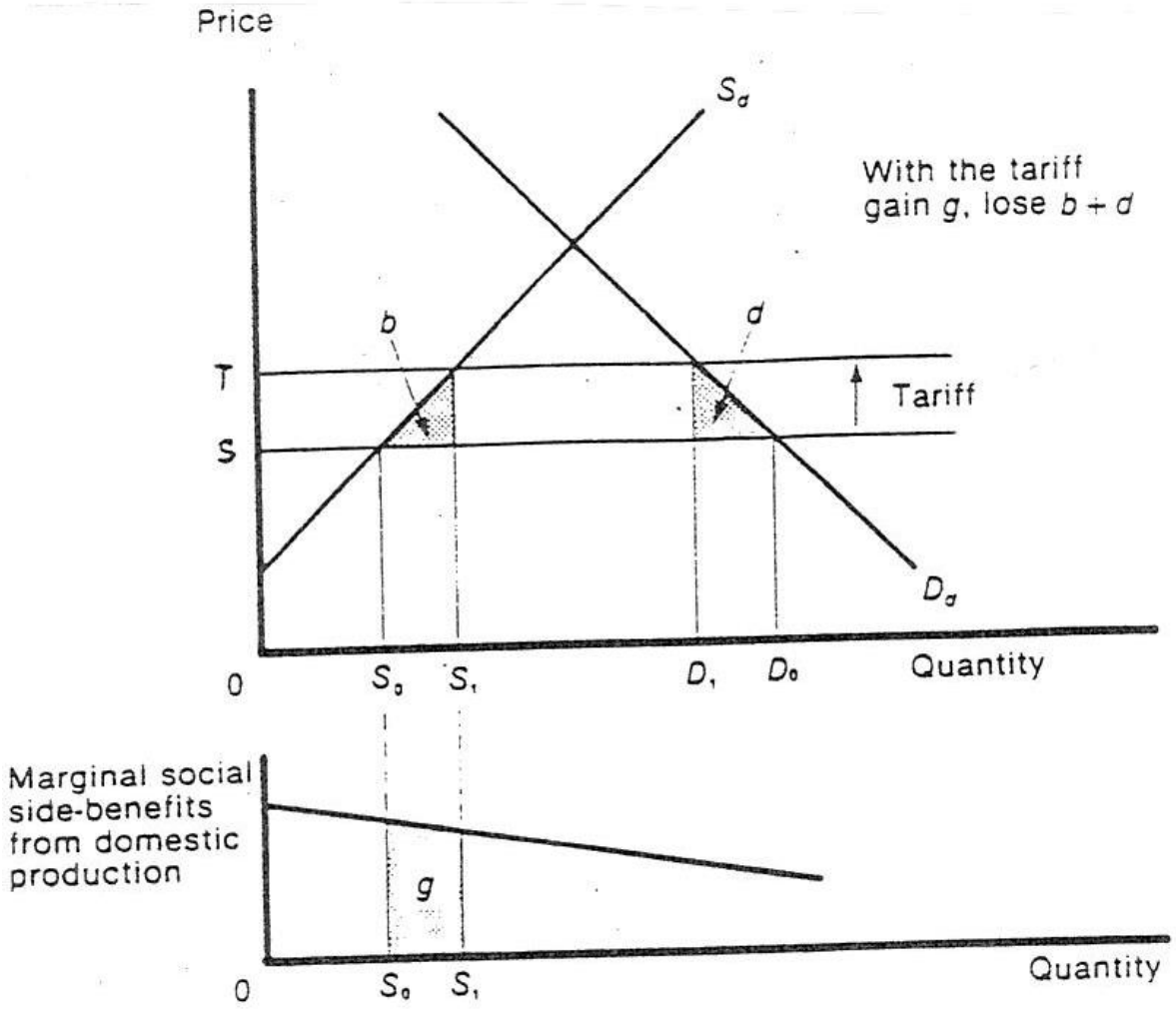
GVL are referred to as the production effect and consumption effect of tariff respectively. JKF is the production effect because it is the excess cost of increased production (KJF plus AKFA'. GVL is the consumption effect because it is that portion of the reduction in consumer surplus caused by lower actual consumption rather than by higher prices. Rudiger Dornbusch put the point forcefully when he writes that "under perfect competition a small price taking country will gain by eliminating tariffs. Consumers are better off because their income stretch further, and resources are used efficiently because they are no longer used to produce goods that could be imported at a lower price"(2)(4)

1.2 TARIFFS, SUBSIDIES AND OPTIMAL INTERVENTION

The benefits that results from tariff protection can be presented graphically as in figure 2 below. The marginal side benefit of protection such as skills acquired by the labour force, reduction of cost of production in the long run, and other benefits discussed in the previous section are represented by area g in the lower panel of the diagram.

The graph shows that tariff protection results in welfare costs. These are indicated by areas b (KJF) in figure 1 and d (GVL) in also figure 1. b and d are the production effect and consumption effect when there is tariff of ST per unit imposed on the imported product.

FIGURE 2 GAINS AND LOSSES WHEN DOMESTIC PRODUCTION IS ENCOURAGED BY TARIFF



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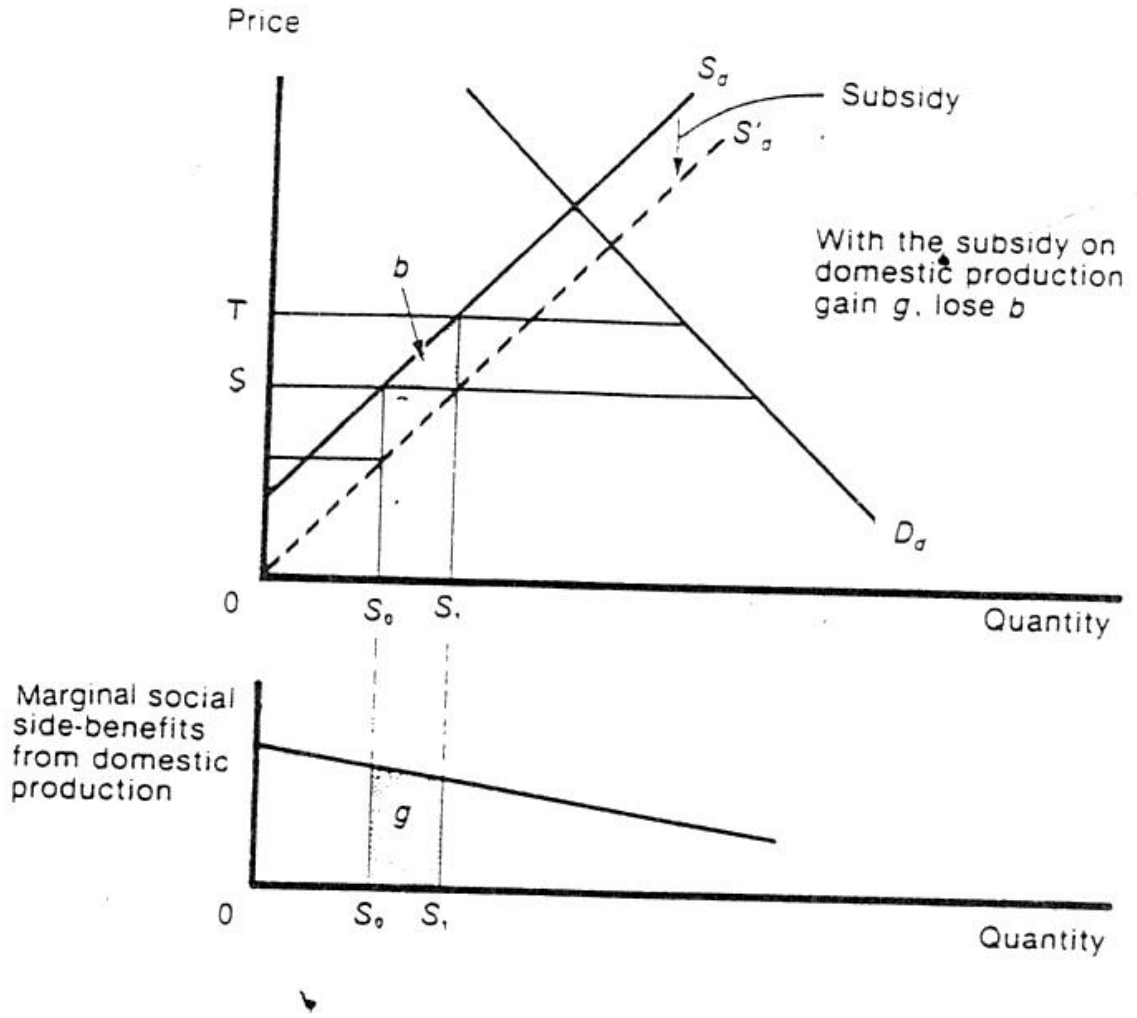
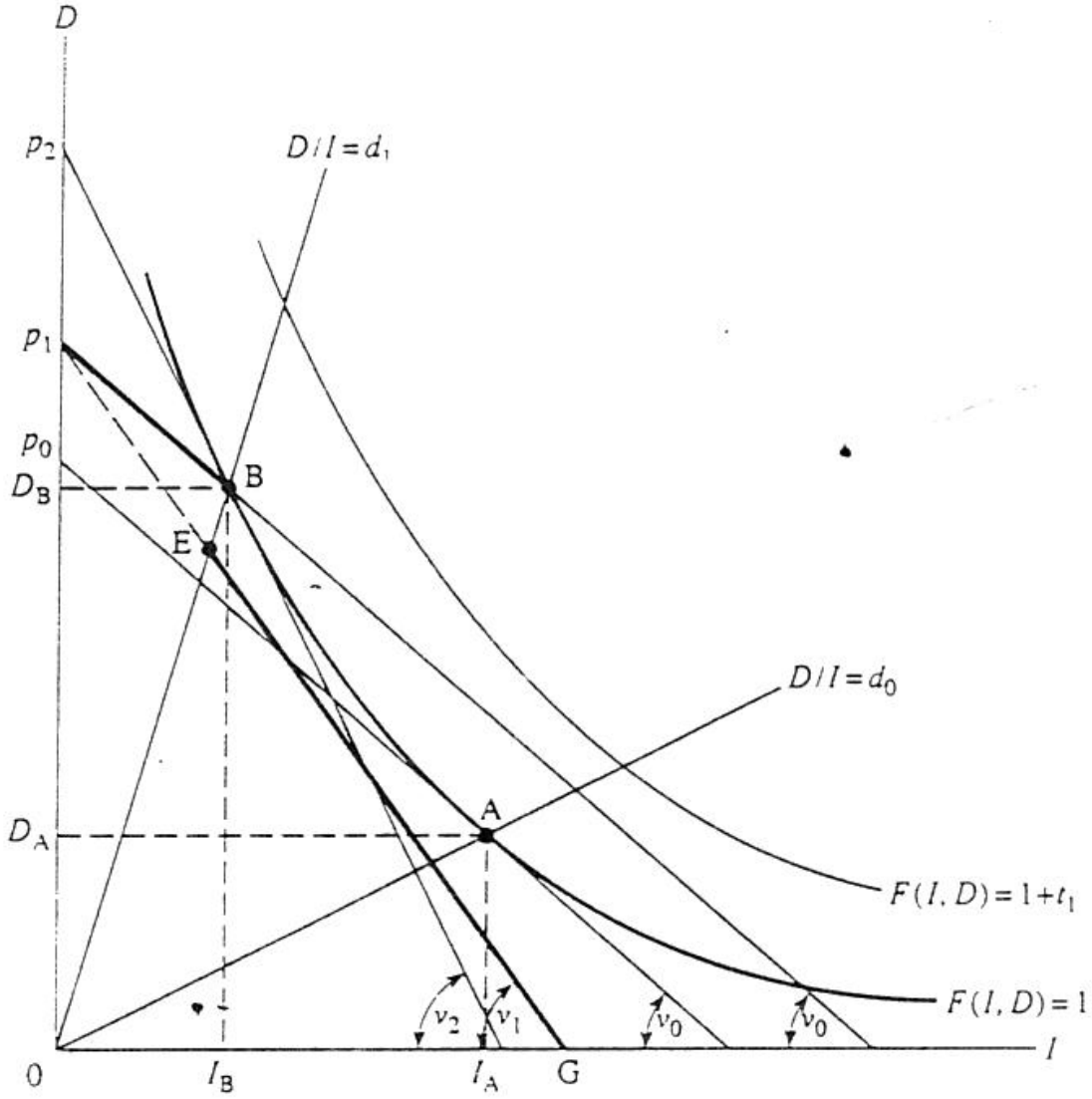


Source: Peter H. Lindert (1986), p.150 (3)

1.3 ANALYSIS OF LOCAL CONTENT PROTECTION AS A PARTICULAR TYPE OF TRADE PROTECTION

The objective of this section is to characterize local content protection, and to compare and contrast it with ordinary tariff protection. It is argued that a local content protection as implemented is less costly in welfare terms than a tariff on imported components. The literature shows two approaches to modelling this question. Mussa (4) (12) assumes that D (domestic inputs) and I (imported inputs) are not perfect substitutes, can be substituted smoothly for each other as illustrated by the unit Isoquant F(I,D)= I in figure 3 below.

FIGURE 3 THE EFFECT OF CONTENT PROTECTION ON INPUT CHOICE: IMPERFECT SUBSTITUTION



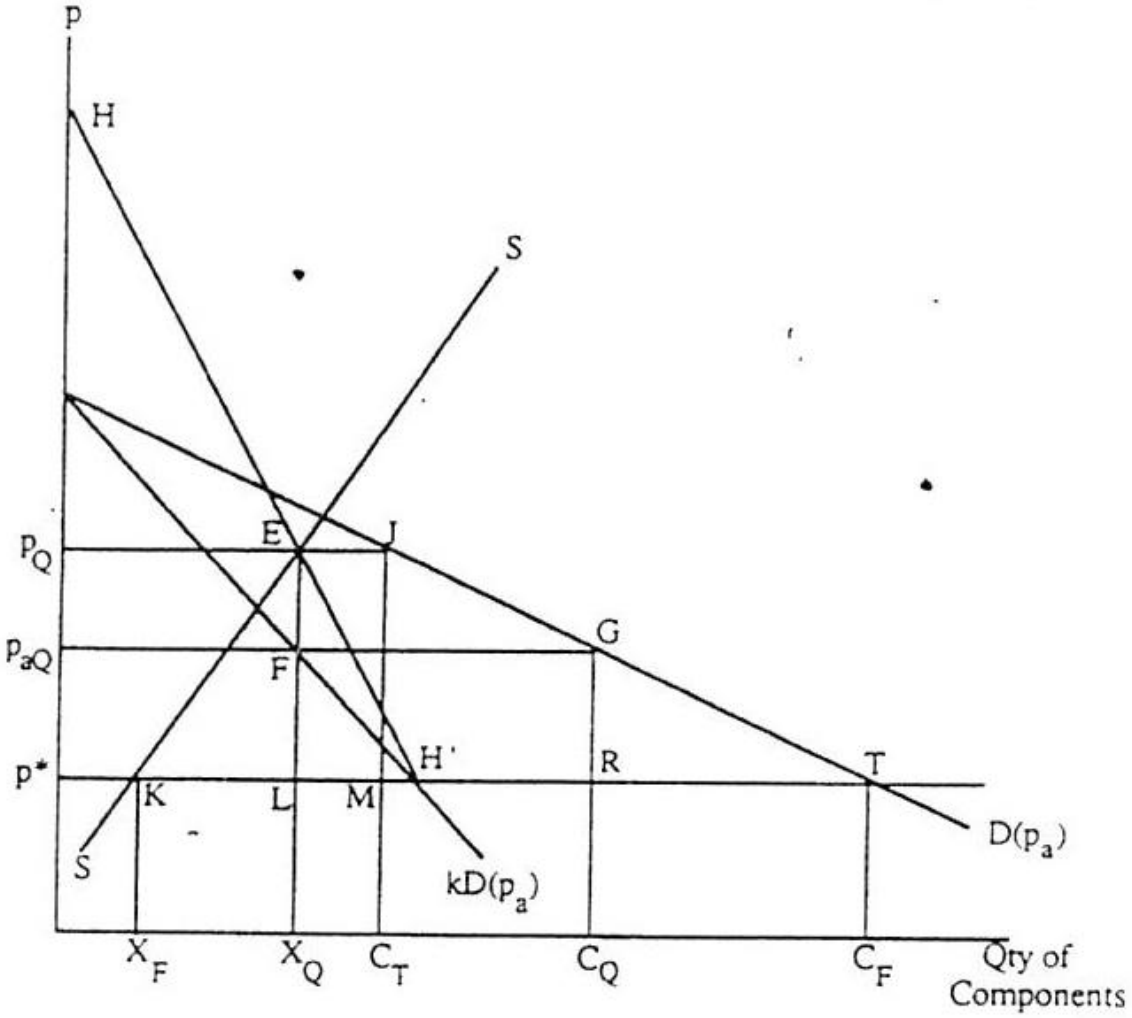
Source: Mussa1193), P.269 (5)

At the relative price of imported input=V0, the cost minimizing input combination is at A, (D/I=d0) and the output price is Po (measured in terms of domestically produced components). When a local content targets (D/I= d1, and d>do) is imposed, the input combination is at B and the input price is at P1. The cost of introducing a local content targets is the difference between P0- P1.

When an equivalent tariff (that is tariff which will raise the D/I ratio to d1) is introduced, the relative prices of imported inputs rises to V2 and producers charge P2 for output. The higher price of P2 indicates that there is consumption distortion loss from introducing the tariff. This point is emphasized by Mussa (1993) when he writes that “since P1 is the true social cost of producing a unit of output using the input combination at B, the difference P2- P1 measures an excess of price charged to consumers over the true social production cost and implies a consumption distortion loss in excess of the distortion loss from content protection” (6)(13).

The second model of a local content protection that enables the effect of tariffs and local content protection schemes to be compared is presented by Neil Vousden (1990) and is illustrated in figure 4 below. In Vousden the two types of components are perfect substitutes but have different prices, the price of domestic components being higher than that of the imported components. The price of imported components is P* while that of domestic components (p) depends on the level of output as shown by the domestic supply curve SS.

FIGURE 4 THE EFFECT OF CONTENT PROTECTION ON INPUT CHOICE: PERFECT SUBSTITUTES



Source: Neil Vousden (1990), P.42 (7)

Vousden here assumes a volume based schemes. He supposes a final good (such as motor vehicle) is produced using a single intermediate good or component (such as an engine). The input-output ratio is fixed (one engine per vehicle). These inputs may be bought from domestic components manufacturers (quantity x at price p) or imported (quantity X* at P*) and as noted above, are perfect substitutes. Output of the final good is denoted by C. All relevant markets are competitive

Since there is a fixed input-output ratio: C= X+X*

If government imposes a local content requirements on final good producers, that is a proportion K of total components must be produced domestically, then

X= K (X+X*)=KC

If they comply with the requirements, motor vehicle producers buy proportion K of engines domestically at price P and proportion (1-K) at import price P*. The average price of an engine is given by

Pa= KP* (1-K)P*

The total demand of components (X+X*) is a function of D(pa) of this average price. The demand of domestically produced components as a function of average price is KD (Pa). What determines domestic output and price in the local component sector?

We have a supply curve in terms of P, but need to derive a demand curve in terms of P. For a given P*, the demand price for any X is shown by curve HH'. This is the amount (P) which car producers are willing to pay for X given that the remaining proportion (1-K) of imported engines is available at p* per unit. HH' lies above curve KD(Pa) for all average prices above P* since P necessarily lies above Pa.

At H', Pa = P=P* and so HH' and KD (Pa) coincide. P(price of domestic components) is determined, as P ϕ, at E by the intersection of HH' and SS'. Domestic output is XQ. The average price associated with XQ output is PaQ and is derived from KD (P) at F. At this average price total demand for components can be read off D (pa), as CQ at G.

When comparison is made with free trade (where total engines purchases are CF and local production is Xf), the welfare cost of the content scheme is EKL (production loss) and GTR (consumption loss). When tariff is compared with content scheme, several differences emerge. The first point to be made is the fact that the prices for imported and domestic components are the same under tariff at level PQ. The effect of paying the same increased prices for both imports and domestic components is an increase in deadweight loss (DWL) on the consumption side. This loss increased to JMT, compared with GRT only under the local content scheme. The deadweight loss under on the production side remains at EKL for both tariff and content scheme.

It is important to note that whether inputs are perfect or imperfect substitutes, the local content scheme (involving a tariff on imported inputs as a penalty for non- compliance but free imports given compliance with a local content requirements) is superior to an equivalent tariffs on imported components as a device for increasing domestic production of components.

There are costs involved in local content programmes, even if they are less than those caused by tariff protection. There may well be gains in the presence of certain distortions such as malfunctioning labour markets, learning effects etc. In what follows an attempt is made to identify and provide quantitative information about the gains and losses in the South African motor industry.

2. INTRODUCTION OF LOCAL CONTENT PROTECTION IN THE SOUTH AFRICAN MOTOR VEHICLE INDUSTRY

The purpose of this section will be to get the main features of the industry's performance clearly set out to relate the performance to the protective policies applied to the motor vehicle industry. It will report on new vehicle sales; rapid expansion at first then contraction after the peak of the early 1980s. It also focuses on the component manufacturing and concludes with changes in the size of the labour force recruited to staff the industry.

2.1 SALES OF NEWLY ASSEMBLED MOTOR VEHICLES

The volume of the passenger cars and light commercial vehicles sold between 1960s and 1990s are produced in table 1 and subsequently graphed in figure 5. There was a sustained and expansionary trend in motor vehicle sales from 1961 to 1971. This expansionary trend was reversed when sales contracted in the 1970s and recorded sharp cyclical declines in sales in two consecutive years in the 1976 and 1977.

A closer look at the volume of vehicle sold as reflected in table 1 demonstrate that there were four years in one decade (1970) where the motor vehicle industry recorded negative growth. Moreover, similar trends of negative growth – six years in a row in one decade (1980) – coincided with the implementation of high local content targets. There were also two years in 1985 and 1986 where the motor vehicle sales were more vulnerable to volatile slowdown as it declined by nearly a quarter of what it recorded the previous year in 1984. The calculation of the growth of car sales by decades based on table 1 highlights the changes as follows:

1960 – 1970 109%

1970 – 1980 37%

1980 – 1990 -24%

The assumption can be made that the continued decline after the impressive growth was influenced by local content protection. The sequence of the assumption would be that as local content targets were increased throughout the 1960s and 1970s and pushed higher in

the 1980s, the cost of producing local components were much higher than imported components, and motor vehicle prices rose relative to those of other commodities, and so annual purchases of new vehicles declined. The essence of this assumption has to be thoroughly investigated to determine the source of the slow growth in sales in the 1970s, and the subsequent strong contraction recorded in the 1980s. This will be achieved by establishing the following:

(a) What happened to the relative prices of motor vehicles over this period?

(b) Why any changes in the relative prices that occurred?

(c) Whether there were not income (or budget) changes in addition to relative price changes, which were equally (or more) responsible?

A rough calculation based on table 2 confirms that motor vehicle prices rose much faster than the consumer price index (CPI). In the 1980s compared to the 1970s. Motor vehicle prices were registering 18,4% per annum compared to 14.7% for other goods between the 1980s and 1990s decades. The source of the motor vehicle price increases has to be identified to estimate the impact of local content protection in the motor vehicle industry.

FIGURE 5 ANNUAL SALES OF NEW PASSENGER CARS AND LIGHT COMMERCIAL VEHICLES, 1960 - 1990.

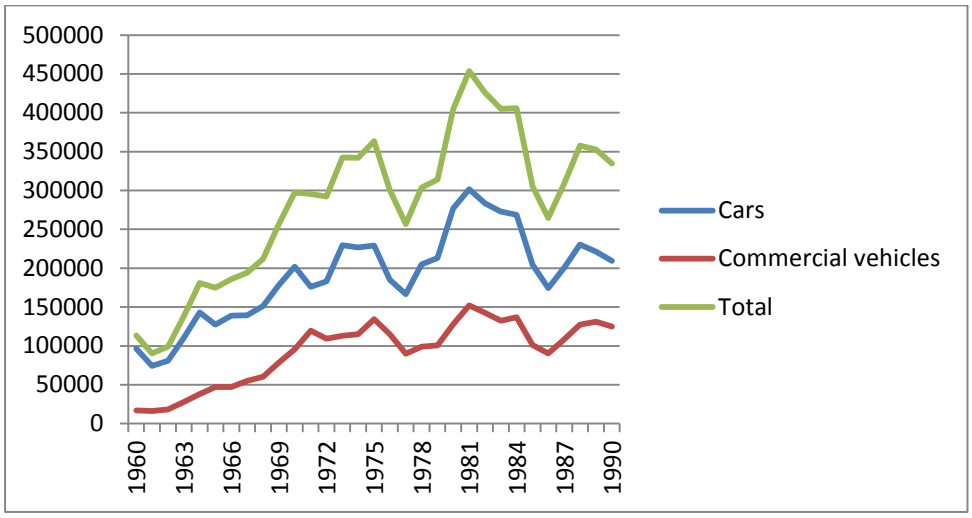


TABLE 1 ANNUAL SALES OF NEW PASSENGER CARS AND COMMECIAL VEHICLES

Year	Cars	Commercial vehicles	Total	% change
1960	96508	17023	113531	
1961	74427	16087	90514	20.27
1962	80901	18117	99018	9.40
1963	110243	27639	137882	39.25
1964	143031	37881	180912	31.21
1965	127659	47093	174752	-5.66
1966	138835	47074	185909	6.38
1967	139223	54820	194043	4.38
1968	151546	60245	211791	9.15
1969	177945	78351	256296	21.01
1970	201854	95719	297573	16.10
1971	175884	119798	295682	0.63
1972	182961	109316	292277	-1.15
1973	229442	112941	342383	17.14
1974	226776	115151	341927	-0.13
1975	229031	134574	363605	6.33
1976	185132	115116	300248	-17.42
1977	166764	90037	256801	-4.47
1978	204736	98959	303695	18.26
1979	213270	100797	314067	3.42
1980	277058	127708	404766	28.88
1981	301528	152013	453541	12.10
1982	283433	142690	426123	-6.04
1983	272822	132317	405139	-4.92
1984	268751	137059	405810	0.16

1985	**204322**	**101005**	**305327**	**-24.76**
1986	**174453**	**90223**	**264676**	**-13.31**
1987	**200824**	**108326**	**309150**	**16.80**
1988	**230500**	**127393**	**357893**	**15.77**
1989	**221342**	**131287**	**352629**	**-1.47**
1990	**209608**	**125171**	**334779**	**-5.06**

Source: Industrial Development Corporation of South Africa, Ltd,1992. (8)

The assumption can be made that the continued decline after impressive growth was influenced by local content protection. The sequence of the assumption would be that as local content targets were increased throughout the 1960s and 1970s and pushed higher in the 1980s, the cost of producing local components were much higher than imported components, and motor vehicle prices rose relative to those of other commodities, and so annual purchases of new vehicles declined. The essence of this assumption has to be thoroughly investigated to determine the source of the slow growth in sales in the 1970s, and the subsequent strong contraction recorded in the 1980s. This would be achieved by establishing the following:

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TABLE 2 COMPARISONS OF CHANGES IN CONSUMER PRICE INDEX AND INDEX OF MOTOR VEHICLE PRICES, 1980- 1990

YEAR	CPI	% CHANGE	PRICE OF MOTOR VEHICLES	% CHANGE
1980	25.5		18.5	
1981	29.3	14.9	21.2	14.6
1982	33.7	15.0	25.1	18.4
1983	37.8	12.2	28.2	12.4
1984	42.2	11.6	31.4	11.3
1985	49.1	16.4	37.5	19.4
1986	58.2	18.5	50.9	35.7
1987	67.6	16.2	62.8	23.4
1988	76.3	12.9	73.1	16.4
1989	87.5	14.7	80.6	10.3
1990	100	14.3	100.6	24.1

Source: Econometrix (9)

The source of rising prices of the motor vehicles can be traced to various factors such as (1) local content targets, (2) changes in exchange rates, (3),quality improvements in motor cars over the period, and (4) increases in costs of inputs other than components eg wages and capital costs. Of these the impact of real depreciation of the Rand in relation to other currencies appeared to be the real cause of price increases in the relative prices of the general output of motor vehicles. A study by Bell (1990) declared that the Rand was depreciating much faster than the Deusche Mark (DM) and Japanese Yen between 1984 and 1988 by 180 and 239 percent respectively resulting in a weighted average of 210 percent of the motor vehicle prices (Bell, 1980, P84). (10)

The increase in the Rand cost of imported components used in the motor vehicle (compared to 120 percent increase in the cost of locally produced components) would have substantially raised the rate of increases of motor vehicle prices is confirmed by the fact that in 1984 imported components comprised 51.4 by value of all components used in motor vehicle assembly and 36 percent of vehicle sales turnover (Bell, 1990 P.59) (11)

2. 3 DECLINING PER CAPITA INCOMES AND DEMAND FOR NEW MOTOR VEHICLES

There were changes in the level of incomes recorded during the 1980s which was accompanied by the rise of the relative prices of motor vehicles. This reinforced the contraction of demand for motor vehicles as a result of their rise in their relative prices and declining disposable income as reflected in Table 3 below. The growth rate of real GDP in South Africa collapsed in the 1980s. This collapse was also accompanied by the decline of personal income over this period. It is also noted that aggregate real disposable income grew by almost 80% during the 1960s, by about 50 % during the 1070s and by not much more than 10% during the 1980s (see Table 3). Clearly the rate of growth of aggregate personal income was slowing in real terms across these three decades.

Working with a population growth of 2.7% per annum during these decades, it is clear that real personal disposable income per capita grew at close to 3% per annum during the 1060s, at about 0,8% per annum during the 1970s, but declined at an average rate of 1,7% per annum during the 1980s (or by 20% over the decade.

A fall in real personal disposable income per capita on this scale will obviously have negatively affected the demand for new vehicles, and this will have been reinforced by a decline in demand for commercial vehicles due to the slow growth of GDP. As said above, the fall in real disposable income accompanied by rising prices was more to likely to impact negatively on the demand for motor vehicles in South Africa. The point of this section has been to show that local content programmes were launched within the context of expanding motor vehicle sales – but that this expansion went into sustained reverse in the 1980s with negative consequences for component suppliers.

TABLE 3 REAL PERSONAL DISPOSABLEINCOME PER CAPITA (1990 PRICES).

Year	PPDI AT 1990 PRICES (Rand Millions)	POPULATION 1960 - 1990	PDI PER CAPITA 1990 Prices Rands
1960	50271	16003000	3141.3
1961	54732	16497492	3317.5
1962	57110	17007264	3357.9
1963	59311	17532788	3823.8
1964	62027	18074551	3431.7
1965	64462	18633054	3459.5
1966	69099	19208815	3597.2
1967	73470	19802367	3710.1
1968	80224	30414260	3929.8
1969	84506	21045060	4015.4
1970	89033	21762118	4085.2
1971	98306	22434567	4381.8
1972	104192	23309515	4469.9
1973	105807	24029779	4403.1
1974	111133	24772299	4486.1
1975	116736	25537763	4571.1
1976	113318	26326879	4304.2
1977	119899	27140379	4417.2
1978	115576	27979016	4130.8
1979	123192	28843567	4271
1980	136118	29491076	4615.6
1981	132881	30266691	4390.3
1982	134697	31062704	4336.2
1983	139407	31879653	4372.9
1984	148237	32718087	4530.7
1985	144114	33581809	4291.4
1986	137639	34407331	4000.2
1987	145105	35277474	4113.2
1988	151244	36174147	4180.9
1989	152945	37098326	4122.6
1990	154888	38051131	4070.2

Source : PDI (Current Prices) – South African Reserve Bank Quarterly Bulletin, Supplement June 1991 (South African National Accounts, 1946 – 1990) (12)

CPI – CSS : SA STATISTICS 1992

2.4 RAPID EXPANSION OF COMPONENT MANUFACTURING UNDER LOCAL CONTENT PROTECTION

Component manufacturing output over time seems to follow the output of new vehicles. However, in the 1960s and 1970s component production grew much faster that the output of new assembled vehicles – possibly in response to the local content schemes introduced (and targets imposed after 1962. An index of the physical volume of manufacturing production for the overall motor vehicle industry (which distinguished (a) motor vehicles, (b) caravans, traders and vehicle bodies and (c) motor vehicle parts and accessories with base year 1963 – 4 = 100) give detailed production the period from 1963 – 4 to 1977. At the peak levels the production index (1963 – 4 = 100) had reached 650,3 for parts, 262,9 for caravans and traders and 199.0 for motor vehicles (with the overall industry index peaking at 277,9 in 1974). Output of parts grew at around 20 % per annum (19.5 %) per annum for the 1963/4 to 1974 (CSS 1978, pp 12.54 and 12.56) (13).

2.5 THE SIZE OF THE COMPONENT INDUSTRY

Component production was growing faster during the 1960s and 1970s than the production of the other sections of the overall motor vehicle industry. This seems to have happened if we use the weights used to aggregate output as an indication of the relative value of output sub – totals. In the mid 1950s the overall motor industry produced just under 4% of total manufacturing output by value, and in the mid- 1980s the figure was just under 5%. During this period the share (relative weight) of components had risen from about 11% to a little under 42% (CSS 1992, pages 12:66 and 12:68). (14)

2.6 BUSINESS HISTORY OF THE COMPONENT INDUSTRY

According to Duncan (1992), growth in the component sector only really took place after local content requirements were introduced (Duncan 1992, p.60 (15)). He noted that growth and investment in the component sector were recorded as follows:

(i) Total capital investment in the parts sector was R15 million in the year 1960.
(ii) The total value of capital stock had grown to R85 million by 1967 (on some estimates) after the initial content target was set at 55% by mass by 1969.
(iii) Most measure investment in the 1960swere made by British, American and South African firms. Usually projects were financed by a combination of foreign and local capital.
(iv) Additional investment outlays in the 1960s were made by Repco-Wispeco, Ruberowes, Borg – Warner, Thomson Ramco and united paints although there were some 200 component companies by the late 1960s or early 1970s.
(v) Expansion in component manufacturing capacity by assemblers also took place in the 1960s.
(vi) The local content targets for the 1970s was set at 66% (by mass) for 1977. Datsun – Nissan and Toyota announced engine plants (R2.5 million) in 1971.
(vii) The South African government provided finance via the Investment Development Corporation:
    (a) R13.5 Million for a plant at Alberton manufacturing engine blocks, heads, crackshafts, and camshafts for the industry as a whole, and
    (b) R4 million for the production of malleable iron in Port Elizabeth for use in the fabrication of housing, hubs and other components.

(VIII) Total investment in the component sector was estimated to be R160 million in 1974 by Nic Swart (1974, (14) (a rough doubling in current values over 7 years since 1967). The component industry itself put the figure at R224 million the next year (1975).

(ix) There was increased investment in the South African market by German assemblers such as V.W, Daimler – Benz and BMW in the 1970s. They increased their ownership stake in plants which had formerly operated as licensees.

(x) The distribution of component manufacturing between assemblers (in plant) and independent firms is presented in Table 4 though the data refers only to components produced as original equipment, The evidence for mid 1970s (the report is dated 1977) indicates that one-fifth (22.17%) of locally produced components by mass were then produced in assembler'sl plants (the remainder of just under 80% was produced by other firms of which there were approximately 300). Local production comprised 67.33% of vehicle by mass.

(xi) Disinvestment and withdrawals (given the stagnant market of the 1980s) by some of the assemblers, and the growth of the German manufactures led some British, American, French and Italian firms in the component sector to close up or sell out (Duncan 1992, p.60) (16)

On other hand, a smaller number of American, Canadian and Swedish companies (Gabriel, EDE,SKF) continued their operation in the component sector, with the British retaining ownership of some large firms such as Lucas and Turner and Newall. As mentioned above the Germans were involved in a broad range of components (Duncan 1992, p.63). (17)

(xii) An important point mentioned by Duncan (1992) (15) is that the formal and informal linkages between overseas assemblers and their component suppliers (whom they often induced to set up here) led to lack of " rationalization" and" unnecessary duplication" in the component industry. Evidence for the claim can be found in the NAACAM Directory of 1991. It lists the number of producers of some components as follows (Duncan 1992, p.68): (18)

(a) 8 firms manufacturing seats and frames
(b) 10 firms manufacturing plastic mouldings
(c) 15 firms manufacturing metalpressings

Some commentators expect that the switch from mass to value and allowing exports to count in the calculation of local content (phase V1) will result in less local content in cars. Duncan argues that "the sudden removal of protection for relatively low cost, heavy components naturally threatens the companies which produce them not to mention workers in the parts sector" (Duncan 1992, p.58). He predicts that there will be shrinkage of the parts sector to a narrower, high value components and export focused base (Duncan 1992, p.77). (19)

TABLE 4 LOCAL PRODUCTION OF COMPONENTS AS ORIGINAL EQUIPMENT FOR MOTOR CARS- JANUARY TO JUNE 1976 FOR 24 MODELS

COMPONENT CATEGORY	000 KG IN PLANT	TOTAL	% BY MASS OF VEHICLES	% PRODUCED IN PLANT
BODY PRESSING	4250	11471	17,44	3,33
ENGINES	2843	5382	7,29	2,74
WHEELS AND TYRES		5246	7,93	
SOFT TRIM	1327	4282	6,82	1,79
SUSPENSION	690	3264	4,87	0,59
TRANSMISSION AND REAR GEAR	129	2573	3,20	0,20
STEERING SYSTEM	66	247	0,34	0,05
GLASS		2189	3,30	
ELECTRIC SYSTEM	140	1900	2,97	0,06
HARDWARE	91	1363	2,32	0,07
BRAKE SYSTEM	165	1986	2,76	0,12
EXHAUST SYTEM	67	852	1,25	0,04
COOLING SYSTEM	77	557	0,75	0,04
FUEL SYSTEM	144	573	0,84	0,14
HEATER AND VENTILATION	125	272	0,34	0,06
MISCELLANEOUS	41	3639	4,91	0,03
TOTALS	10155	45790	67,33	9,26

TOTAL MASS 24 MODELS 68 008 (based on 66049 vehicles)

MASS PRODUCED IN SOUTH AFRICA 45 790

MASS PRODUCED IN VEHICLE PLANTS 10 155

% IN PLANT OF TOTAL LOCAL PRODUCTION 22,17%

% OF VEHICLE PRODUCED IN PLANT 9,26%

SOURCE: B.T.I, 1977 REPORTNO.1777, P.9 (20)

2.7 SIZE OF THE SOUTH AFRICAN MARKET FOR MOTOR VEHICLES AND COMPONENTS

An output level consistent with economies of scale in assembly, as outlined in the British study by Munk, is 60 00units per annum. This output level will be used to indicate whether South Africa is reaching the minimum efficient scale in motor assembly or not. For components Table 5 will be used as reference for minimum efficient scale in component manufacturing.

TABLE 5 ESTIMATES OF MINIMUM EFFICIENT SCALE IN WORLDWIDE COMPONENT PRODUCTION

COMPONENT PROCESS	MINIMUM EFFICIENT SCALE/ OUTPUT PER ANNUM
Engine block castings	260 000 - 1 Million
Engine block Machining	150 000 – 600 000
Engine assembly	100 000 – 500 000
Transmission/ gearbox	260 000 – 500 000
Stampings	1 Million – several million
Body wait	200 000 – 400 000`
Frame	200 000 – 2016 000

Source: Derived from Bureau of Industrial Economies (1998) and reproduced in Black and Kaplan (1993) (21)

2.7.1 MOTOR ASSEMBLY

The South African motor vehicle industry suffered a serious and drastic decline in car sales between 1980 and 1990. The Board of Trade and Industry gives a picture of the motor vehicle industry in the late 1989: “After having achieved record levels during 1981, sales of passenger cars and light commercial vehicles showed decreases in the succeeding years with sales of the year 1986 well below the levels that had already been achieved in 1969. Sales of passenger cars and light commercial vehicles fell sharply particularly in 1985 resulting in exceptionally difficult conditions for both motor vehicles manufacturing industry and its associated industries” (22).

During the years 1965 to 1977 the BTI made recommendations in reports nos 1290 (21) and 1977 (23) to achieve rationalization of the industry. The recommendations were as follows:

(i) Efforts should be made to achieve the largest possible production volumes in the vehicle and component industries in order to minimize unit costs per unit (24).

(ii) Many of the economies of large scale production could be achieved if the industry could be organized on a basis of vertical integration (25). Vertical integration means that component producers and motor vehicle assemblers are not operating as a single firm.

(iiii) Production should be concentrated on as few basic models as possible, and these models should be kept in production over a relatively long period of time. Table 6 states that Toyota appeared to be the only firm which has reached the output level consistent with economies of scale as outlined in the study cited by Munk.

TABLE 6 PHASE V MARKET SHARE OF VEHICLES

Manufacturer	Passenger cars	Light commercial vehicle	Total Market	Percentage share phase V
1. Toyota	45 299	22 501	67 800	28.2
Volkswagen SA Pty Ltd	30 314	5 868	36 182	15.1
SAMCOR : Ford MMI	19 279 16 837	8786 7067	28 065 23 904	11.7 9.9
NISSAN	13 624	16 277	29 851	12.4
Delta motor corporation	13 954	8118	22072	9.2
Mercedez Benz (pty) Ltd	19 430		19 430	8.1
BMW (Pty) Ltd	13 089		13 089	5.4
Total	171 826	68 567	240 033	100

Source: BTI (26)

2.8 UNDERUTILIZATION OF CAPACITY

Average costs were presumably higher during the years of the 1980s because production fell below full capacity levels (generating unused capacity). Unused capacity has exacerbated the problem of lack of economies of scale. Table 7 indicates that the percentage utilization of production capacity declined rapidly in the motor vehicle industry as compared to manufacturing as a whole during the first part of the 1980s.

TABLE 7 UTILISATION OF CAPACITY

YEAR	TOTAL MANUFACTURING	MOTOR VEHICLE ASSEMBLY, PARTS AND ACCESSORIES
1980	88.5	86.8
1981	89.5	91.1
1982	87.6	87.0
1983	84.9	80.1
1984	86.3	85.5
1985	84.2	74.0
1986	78.5	62.3

Source: B.T.I (27)

2.9 MODELS AND MAKES

The Board of Trade and Industries had always advocated a reduction in the number of models assembled by local motor firms on economies of scale grounds. In the early 1960s South African manufacturers were estimated to be producing 24 makes of vehicles with 102 models (27)(30).Calculations have been done by the Board of Trade which show that there are less cost reductions to be obtained by reducing the number of models (31). They report that a 75% reduction in the number of models reduces cost by 2.46%.

TABLE 8 NUMBER OF MODELS PRODUCED BY MAKE AND MANUFACTURER, 1989

MANUFTURER	VEHICLE MAKE	NUMBER OF MODELS
BMW	BMW	28
DELTA CORPORATION	OPEL	16
MECEDEZ BENZ	MERCEDEZ BENZ HONDA	17 10
NISSAN	NISSAN	18
SAMCOR	FORD MAZDA	23 15
TOYOTA	TOYOTA	31
VOLKSWAGEN	VOLKSWAGEN AUDI	22 9
OTHER		11
TOTAL NUMBER OF MODELS		200

Source: Council for scientific and Industrial Research (28)

Table 8 indicates that the number of models has increased by almost 100 percent from 102 in 1960 to 200 in 1989, while the number of makes of vehicles decreased. The reduction in the number of manufacturers from fourteen in1967 to seven in 1989, has to do with the failure of demand to grow in the 1980s.

2.10 SCALE AND THE SOUTH AFRICAN COMPONENT INDUSTRY

The evidence presented in Table 7 demonstrates that minimum efficient scale was generally greater in component manufacturing than in assembly. Black and Kaplan see this as serious for South Africa given the fragmentation of the industry. The cost raising impact of the proliferation of makes and models being assembled in South Africa arises mainly out of the impact on component production rather in the assembler process (29). An interview with the managing director of Atlantis foundry show that production costs for truck engine casting would fall by an estimated 20% if annual production volume were to rise from 5 000 to 30 000 units (30). They provide evidence that show that there are considerable differences between South African and World scale foreign plants not only in terms of plant size and output but especially in the variety products produced, and conclude that “scale of production is clearly a problem for South African industry. (31)

2.11 EVIDENCE OF EXCESS COSTS DUE TO LOCAL CONTENT PROTECTION

A study by Bell and the B.T.I (1988) report takes the view that "at least in recent years, the excess costs of local sourcing due to content protection (despite the inefficiencies of WCP) have been much smaller than has been commonly supposed" (32).

2.12 EMPLOYMENT

Employment in the motor vehicle industry as a whole grew along with output in the expansionary phase of the industry. It more or less doubled in the 1950s, more than trebled in the 1960s and grew by close to 50% in the 1970s. During the 1980s it levelled out across the decade – or, looked at differently, declined from its peak (see table 4 IDC, 1988. P.95) (33)

The influence of components in the expansion of employment is fairly clear in the rapid growth of the labour force in the 1960s and early 1970s. Over the 1962 – 1976 period, that is, from the commencement of local content requirements the labour force in the overall industry grew at about 10% per annum. According to Duncan the labour force in components had more or less equalled the labour force in motor assemble by 1973, and by 1989 had double its size (73 000 as against 37 000) (Duncan, 1992, pp 56-57). These figures do not entirely correspond with the official (CSS and IDC) figures – being rather too high. They yield an industry total of 110 000 against the IDC's 80 100 (Duncan, p.60). However, Bell reports the same figures as Duncan (37 00) for assembly in 1989, and 60 000 workers "directly in components" – yielding an aggregate of 97 000 for 1989 (Bell 1990, p.76) (34)

TABLE 9 MOTOR VEHICLE EMPLOYMENT

Year	WHITES	COLOUREDS	INDIANS	BLACKS
1972	18960	12630	1040	24880
1973	19320	13690	1340	26880
1974	20210	14020	1550	30810
1975	21310	14190	1950	33390
1976	21840	14460	2070	36080
1977	21150	13410	2320	33440
1978	24140	13700	2410	34450
1979	20800	14260	2430	35810
1980	20430	14390	2600	42790
1981	21060	16950	2930	49310
1982	22140	16740	2910	54470
1983	22610	15060	2540	49330
1984	23840	16250	2710	47650
1985	23160	15280	2560	43840
1986	20580	13630	2790	44200
1987	20200	13430	2730	43750
1988	20700	13600	2880	42800
1989	21100	13900	3000	42100
1990	21600	13900	3100	43500

Source: Industrial Development Corporation of South Africa, Ltd., Department of Economic Research and Development, Sectoral Data Series – Manufacturing : Subsection 24 – Motor Vehicles, Sandton, 1992 (35)

SUMMARY OF THE MAIN FINDINGS

1. Evidence confirm that the component manufacturing industries have achieved economies of scale, while the South African motor assemblers and independent component manufacturers did not, and do not, produce on a scale anywhere near world minimum efficient scale

2. The investigation presented in the B.T I. report (1988) and supported by Bell (1989) declared that excess costs due to content protection have been " much smaller than commonly supposed". They concluded that in the case of an average small car, the excess costs were lower than international costs, if one focuses on the situation below 50 percent of local content by mass. Professor Bell noted that " locally sourced components comprising 70 percent of the weight of the average small car actually cost less than they would have been if imported, by an amount equal to 8,3 percent of the excise value of such vehicles. The figures imply that local components in the first 50 percent of local content were cheaper than imports by an amount equal to 12 percent of vehicle excise value.

3. Output and employment in the motor vehicle industry, particularly in component production, expanded to greater levels than they would have done in the presence of various labour market rigidities and distortions. Put differently, the motor vehicle industry was closer to socially efficient levels of output and employment than it would have been without protection. This was because the growth of output and employment was itself a benefit that protection was designed to achieve.

4. Increased output generated learning effects and positive externalities. There is, in other words, a positive correlation between the benefits of more socially efficient levels of output and employment on the one hand, and the generation or accumulation of technical skills, the acquisition and diffusion of new technology and industrial capacity.

5 A key original objective of the policy of local content protection was to reduce the share of imports in components both assembled and used as spares. The findings of this study indicate that the percentage of local material content in the total value of components assembled was about 50 percent in 1981-83, and had returned to this level by 1991. This showed remarkable success when compared to the percentage of local content of 18-19 percent by value in 1956- 58.

6 Exports of vehicles and components have risen substantially. Professor Black (1994) noted that exports rose from negligible volumes in themed – eighties and reached R1, 6

billion in 1992. Some 25 percent of this total was exports of catalytic converters (which because of their platinum content are high value products.

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