AUTO-ANCILLIARY INDUSTRY IN KENYA
THE STUDY OF THE MANUFACTURE
OF
LEAFSRPINGS, EXHAUST SYSTEMS, FILTERS, RADIATORS
BRAKE PADS AND BATTERIES

BY

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AUGUST, 1987

I DECLARE THAT THIS RESEARCH PAPER IS MY ORIGINAL WORK AND HAS NOT BEEN PRESENTED IN ANY OTHER UNIVERSITY.

DATE 12/6/87

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This research paper has been submitted for examination with our approval as University Supervisors.

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ABSTRACT

The domestic production of auto-ancilliaries (motor vehicle components) in Kenya is an import-substituting strategy aimed at increasing the domestic content of the locally assembled vehicles as well as to offer maintenance services to the already existing vehicles.

This study investigates the problems facing the auto-ancilliary industry especially the firms manufacturing leafsprings, radiators, exhaust pipes and silencers, brake pads, filters, and batteries. The issues investigated relate to capacity utilization, economies of scale, protection and export promotion, and acceptability of these components by motor vehicle assemblers.

Results from the study show that there is capacity to make more motor vehicle components in Kenya. On the average only 27% of the capacity is utilized. This represents massive underutilization of resources. The underutilization is mainly due to inadequate demand and having many vehicle and component models in Kenya. Economies of scale can be achieved with expansion of output.

The study also shows that there exists an opportunity for export promotion. Due to the present export compensation of 20%, four components manufacturing industries have effective rate of export promotion between 14-15%. However there is need to reduce bureaucracy involved in obtaining export compensation and rebates on sales tax.

Also shown is the fact that most motor vehicle assemblers in Kenya are reluctant to use the locally-produced components. The majority of assemblers only use locally-manufactured items mainly because the government bans the importation of such components.

Lastly the study recommends various options of assisting the auto-ancilliary industry.

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CHAPTER ONE

INTRODUCTION

In motor vehicle manufacture, numerous components are used. A small car may include upto 2,500 major parts and assemblies. About sixty different materials are used and almost all manufacturing processes are involved. Motor vehicle components industries fall within a cross-section of 4-digit U.N. standard industrial classification codes and comprise a range of firms manufacturing original motor vehicle parts and accessories used to replace old ones.

Motor vehicle components can be classified based on their use or the categories they belong to such as: tyres and wheels, bodyworks, filters, chassis, engines, cables, brakes, transmission, instrumental pannel, electrical and exhaust systems. Components can as well be classified as those made outside by independent component manufacturers. The design of every component however must be approved by the motor vehicle manufacturer.

The finished motor vehicle components' distribution consists of replacement sales through distributors other than the manufacturers as well as the sale of original equipment parts to motor vehicle assemblers. The allocation of finished products to the two channels differs among firms; however, the year-to year fluctuation in the volume of sales is usually smaller where original equipment comprise all sales[1].

In the replacement business, the independent parts manufacturers usually compete with automobile manufacturers who also have their own replacement outlets through their dealers where importation of components is not restricted. To protect their replacement business, automobile manufacturers require their dealers not to handle parts from independent producers without approval from the motor vehicle manufacturers.

The development of the motor vehicle component industry pertains to the second stage of import substitution that promotes, not only the motor vehicle industry, but also other industries with which the motor vehicle components industries have linkages. In recognition of these linkages for the domestic markets, most LDCs' governments levy tariffs or even impose bans on imported components to protect domestic industries. Where a ban on importation of a component has been imposed or where the component is purchased from another source, the overseas automobile manufacturer gives an allowance or rebate for the item excluded from the completely knocked down kit purchased by the assembling firm.

In Kenya, the production of motor vehicle components is growing slowly. The component manufacturers are unable to achieve economies of scale mainly due to low production runs. The components industry is oligopolistic with the market not being shared equally. Some firms also produce more than one component or engage in more than one activity. The motor vehicle market is characterised by numerous vehicle makes and models with little standardization of most of the components between various vehicle models even of same make. This has led to production of many components in low quantitites. Most vehicle component manufacturers plan to deversify e.g. Auto Spring Ltd. has started to produce wire harness, Varshani Brake Linning LTD is starting to produce pressure tubes and Associated Battery Manufacturers LTD sells lead to other manufacturers.

Most components' manufacturers in Kenya are either agents of or operate under licence from multinational firms. This sometimes restricts the source of inputs since the licensor influences where to purchase from. For example, if a product is manufactured under licence from a British firm, the inputs may have to come from Britain or from a subsidiary of the licensor.

1.2 STATEMENT OF THE PROBLEM

"The development of the engineering industry in LDC's depends not only on the machinery and equipment available but also on their full utilization"[2]. Despite high nominal tariffs or even bans on importation of motor vehicle components, that can be manufactured locally, competing imports still occur in Kenya. This is especially serious since capacity in the engineering industry is underutilized. Local producers of major vehicle components face a small market which is further subdivided into many models of vehicles and components.

This limits the ability of motor vehicle component manufacturers to achieve economies of scale.

The demand for motor vehicle components is for many items, some with just minor differences. Lack of standardization in this industry leads to high cost not only in this industry alone but also in motor vehicle assembly and repairs.

Inadequate study of the motor vehicle components industries in Kenya has left many questions unanswered. The answers to these can assist in policy making. Some of the research questions are:

- What is the rate of capacity utilization in these industries? If not operating at optimum capacity, why?

- How effective are the protection policies of Kenya for these industries? Do the policies encourage or discourage their development of motor vehicle ancilliary industries?

- Is proliferation of vehicle and components models an advantage or a hinderance to development of components industry in Kenya? Is there potential to develop this industry by standardizing models so as to benefit from economies of scale?

1.3 OBJECTIVES OF THE STUDY

The study examines the problems facing the major vehicle components manufacturing industry in Kenya. This information may illuminate the dynamics of industrilization. The study is:-

1. (a) To define the rate of capacity utilization in the Kenyan motor vehicle components industry taking leafsprings, battaries, exhaust pipes and silencers, radiators, brake pads and filters as example.

   (b) To investigate reasons for and implications of present level of capacity utilization in the industries studied.

2. (a) To determine the protection accorded to the local manufacturers of the selected components.

   (b) To determine the effective rate of export promotion for the selected industries.

3. To document the extent proliferation of vehicle and component models affects economies of scale in the local manufacture of motor vehicle components.

CHAPTER TWO

LITERATURE REVIEW

INTRODUCTION

This chapter will briefly review the economic studies about motor vehicle components industry and economies of scale in manufacturing industries. Most of the available published studies devote only a few paragraphs to motor vehicle components when discussing the motor vehicle industry. The paragraphs in most cases are addressed to particular problems e.g. CKD deletion allowance, set-up time in multiproduct firm, etc. This section will review the work of Allen, Baranson, Rose, Coughlin, Balassa, Ahmad, Todd, Rhys as well as a report by the Ministry of Industry (Kenya 1982).

LITERATURE REVIEW

After setting up assembling plants for motor vehicles, most developing countries have moved a stage further to engage in motor vehicle components' production. This shifts the control of the components manufacture from the motor vehicle manufacturers or multinational firms to independent producers in LDC's. The relationship between the motor vehicle manufacturers and the independent manufacturers of components is however not always good, as will be shown.

Allen (1952) studied the auto-manufacturing industry in

America and found that firms in this industry pursued a policy of tapered "integration" for parts. Under this approach, motor vehicle manufacturers produce enough parts in their own facilities to meet a substantial share of total peak production requirements. This cuts independent producers out[1]. With the advent of assembling plants in LDCs, this practice has changed among the motor vehicle manufacturers. They tend to relegate some responsibility of producing components to specific suppliers of their own choice. The result is that manufacturers of vehicles and independent producers compete both on standards and pricing.

Ahmad (1986) considers the relationship between manufacturers of component in developed countries and motor vehicle assemblers in LDC's as principal versus subject. That the deletion allowances are rigged by the foreign principals sometimes with help from local assemblers[2]. The local assemblers inturn demand that local component producers charge for their items amounts similar to the deletion allowances. He asserts that allowances for parts that can be manufactured locally are kept low while those that are hard to make are kept high thus making it very difficult for local component manufacturers to compete. In addition representatives of foreign principals visit local industries and Government departments to appraise themselves of recent developments in the automobile components industry.

Based on studies in Pakistan, Ahmad gave four reasons explaining the slow growth of motor vehicle components industry in LDC's which, inturn, explains the relationship between motor vehicle and component manufacturers in LDC's, motor vehicle assemblers in LDC's, and components manufacturers in developing countries. These are as follows:

(i) Local assemblers are not interested in local development of parts as it is more profitable if they (assemblers) keep importing due to the low deletion allowances on the locally producible components.

(ii) Deletion allowances are not realistic, are defined mainly in percentage form not in part-wise basis, and keep on changing at and for the convenience of foreign motor vehicle manufacturers.

(iii) Foreign manufacturers are not keen to transfer technology to local assemblers because, by doing so, they threaten their own markets.

(iv) Lack of machinery to monitor deletion allowance programme gives chance to motor vehicle manufacturers to manipulate it at the disadvantage of local component producers because the latter will be forced to compete with artificial prices often lower than production costs in LDC's.

The relationship between motor vehicle manufacturers and local components producers as shown by the evidences is not restricted to DC's versus LDC's. It is even evident with local manufacturers of motor vehicles. In Malaysia manufacturers of the national car, PROTON SAGA, use the cost of parts in Japan as the basis for setting the prices it pays for local items even though production costs are different in the two countries. This was observed by Todd[3]. This was further confirmed by analysing the words attributed to the executive director of PROTON that ..."

> "we cannot succeed without the suppliers, but we told them that they sink or swim with us"[4]

In this case the components manufacturers have to accept the prices set by proton and as profit maximizers it cannot be a surprise if they look for the lowest price possibly from large producers of parts in Japan.

Evidences of low deletion allowances have also been shown by Coughlin (1982) and Baranson (1960), based on studies on engineering workshops in Kenya, and automotive industries in various LDC's respectively. In Kenya, the deletion allowance for a pick-up vehicle door and wire harness is estimated to be about 25% of replacement cost and 75% of production cost in the mother country respectively. In Newzealand, it was estimated that deletion allowance given to motor vehicle assemblers in 1960 was about 50% of local per unit cost and as well lower than CIF price[5]. Assemblers in LDC's would therefore be unwilling to use local components because they are comparatively expensive. But since the deletion allowances are low, the assemblers are biased against domestic producers of components. A more far reaching revelation is that low deletion allowance leads to high motor vehicle prices if the government bans importation of certain components since deducting a smaller amount from the original cost of a CKD kit inflates the residual parts by the difference between deletion allowance and the actual production cost of components excluded from the CKD kit. When finally the assemblers include the local components whose prices are high due to high cost of local production, the sum becomes enemous. In the final analysis the locally assembled car becomes even more expensive than an imported completely built unit.

The market for motor vehicles in many LDC's is characterised by proliferatin of models. This becomes even more prominent in components since one model can accommodate different models of components depending on the intended market for the vehicle. For example a similar model of a vehicle modelfor the European market has a different exhaust system from that made for Kenyan market. Unfortunately proliferation of vehicle and component models poses a problem for motor vehicle components industry since it involves changing from one jig or die to the other. Set-up time must be allocated for this change. In addition where there are many models only few units of each can be produced. For instance, in one case, Rose (1977) estimated the set-up time for making 100 units of a metal product in New Zealand to be equal to 31% of total labour time. At a production level of 1000 units of the same product, this time fell to 6.5%[6]. This shows that much time is wasted on setting of machines if production is for many different items and at low units of production. Ahmad (1986)[7] pursues this subject further and speculates that allowing imports of all vehicle makes into a country instead of manufacture of limited makes and standardizing models as the single biggest factor deterring local development and manufacture of components in LDC's. He asserts that demand for vehicles would not exceed a certain number of units in the forseable future and that producing components for many different vehicle models just divides the market into smaller uneconomic units. Standardization therefore becomes the solution to promoting the automobile industry for it increases the desired volume of output, reduces service charges and import bills, and reduces inventory carrying costs of different intermediate inputs which occur when many different models of components have to be manufactured.

Many vehicle models affect economies of scale in the manufacture of components. Numerous models tend to shift the optimum output in units and raises average cost of production for firms engaged in this production. Using the figures on production optima for the manufacture of major components in U.S., Rhys maintains that two maxinas can be reached by car makers viz: shortterm and long-term maximas. He maintains that any firm operating below the longterm maxima suffers from sub-optimum working and is inferior. The maximas however are not static in that if many vehicle models are produced, the number of units making the maxima tends to be higher hence harder to achieve with limited resources and small market for each model. This prompted Rhys to say that:

> "as firms produce a number of basic models in order to cover the market, the production required to give the optimum are well in excess of 2 million units a year"[7]

This figure is based on the then American situation where production costs decrease with output until a maximum of about 2 million units per year is reached beyond which dis-economies arise. The figure must be different for the developing countries, however the production of many different models which has been identified to push the maximum further is very pronounced in LDC's. Many models of vehicles and components therefore is a drawback to achieving economies of scale. Much time is spent in learning various techniques of production when many vehicle models are produced. Rhys argues that efficiency in management, handling of production etc. result from familiarization of workers with products. Production of many different models exposes workers to newer products and gives little chance to learn especially if the models are technically different. In the final analysis the output at initial stages are often of low quality yet the first product is very important for a firm's reputation which inturn determines the number of customers. Though based on the car manufacture, Rhys argument applies indirectly to the components industry because the former involve designing, manufacturing and assembling of the latter. Economies of scale in car manufacture therefore reflects efficient operations in the components sector.

Three possibilities of exploiting economies of scale in manufacturing industries by Balassa (1977)[9] are given as follows:

(i) Construction of large plants to produce a single product.

(ii) Reducing product variety in individual plants (horizontal specialization)

(iii) Manufacturing parts, components and accessories of a given product in separate establishments (vertical specialization).

He asserts that the efficient scale of output is large and costs increase substantially at low output levels for most intermediate products. Underlying the above argument is the fact that scale economies depend on the size of domestic market accessible to domestic producers which depends not only on their efficiency but also on regulation of imports through a country's protective system.

Kenya's Ministry of Industry (1982) studied the development of the motor vehicle industry. The findings compiled in Draft Report Volume II show that utilized capacity in many auto-ancilliary industries is low. The report also points at low protection, low deletion allowance, and proliferation of vehicle models as possible causes of low capacity utilization. Many components' manufacturers interviewed then felt that the difference between nominal tariffs on inputs and finished products was too small to protect the producers. According to this report however, capacity utilization is defined in physical volume only without consideration to labour and capital hours used. Proliferation of models is based on each manufacturer's choice of what he/she considers as the best number of makes of vehicles without attempting to analyse effects on production. The magnitudes of the effects of the stated problems are not shown hence the document is of little policy importance.

CHAPTER THREE

METHODOLOGY AND ANALYTICAL FRAMEWORK

3.1 INTRODUCTION

This section shows how the research problems identified in the statement of problems in chapter one and literature review in chapter two are investigated. The study covers both manufacturers of the selected parts and motor vehicle assemblers in Kenya.

A list of all manufacturers of parts was compiled from the Kenya Association of Manufacturers register. This list was narrowed to the names of firms manufacturing the six selected components studied. Firms visited were also asked to name their competitors. Finally, other firms were identified through their advertisements placed in Autonews, the official magazine for Automobile Association of Kenya. One firm was found to have closed its leaf spring department and sold the machinery to another; however the general manager was interviewed on problems facing the industry. The few motor vehicle assemblers were well known and all were visited.

Letters of introduction and appointment seeking were sent to all the assemblers of motor vehicles and to the manufacturers of the selected components. Follow up was made by telephone calls where the replies were not forthcoming.

Data was collected by personal interviews and factory tours which collectively took approximately one and a half hours on each firm. The interviews were based on questionnaires (see appendix 1 and 2) supplemented by questions arising from matters of interest during factory tours. Some questions from the questionnaire were the same as those used in the industrial research project questionnaire because the variables sought were similar and more important, the questions have been used successfully to study other manufacturing industries.

Motor vehicle assemblers were asked:

- when they started operations
- the number of makes and models they assemble
- the components they get from domestic manufacturers
- to rate the six components in terms of price, quality and reliability of supply
- to state whether they intend to use more of the local components.

The manufacturers of the six selected components were interviewed about:

- when they started production
- capacity utilization e.g. number of shifts, duration of each shift, number of working days per week and number of employees.

- output
- problems facing them
- estimated size of the Kenyan market for the component(s) manufactured and the portion captured by that particular firm.

The research problems can be analysed in the following hypothesis:

1. The autoancilliary industry in Kenya seriously underutilizes its productive capacity.

2. Firms in the autoancilliary industry are under-protected. High tariff duties in intermediate inputs and uncertainties associated with getting import licences make the cost of production to be not only high, but also unpredictable.

3. Unnecessary product differenciation in the auto-ancilliary industry has led to short production runs which hinder reaping of economies of scale.

The study will also investigate why local assemblers of motor vehicles are often reluctant to use the locally manufactured components.

3.2 ANALYTICAL FRAMEWORK

This section shows how the study determines:

(a) acceptability of the components,

(b) rate of capacity utilization,

(c) the effective rate of protection, and

(d) the effect of proliferation of vehicle models and the possibility of economies of scale.

3.3 ACCEPTABILITY OF THE COMPONENTS

All the six components studied are listed on legal notice No. 22 of 1980 as stated earlier. However, the users' feelings about the locally-made components are significant because unless they have faith in our local products, users will buy from external sources despite big price differences. If imports are banned, the alternative is the black market which is detrimental to the Kenyan economy.

Motor vehicle assemblers and/or CKD kit improters, are the most representative group through which users' opinions can be extracted. This is because, in Kenya most ordinary users might not know the source(s) of components used in any motor vehicle. Secondly assemblers and/or CKD kit importers are manufacturers representatives whose role is partly to safeguard the reputation of various manufactures hence have to ensure that good quality components are used. Thirdly most assembled vehicles bear the trade marks of their assemblers or CKD kit importers hence in case of any complaint users can complain to the assemblers and/or CKD kit importers. Lastly three out of four assemblers in Kenya are involved in the choice of sources of components used. In case of the fourth one the duty of choosing components rests with CKD kit importers.

To analyse the acceptability of locally made components, a questionnaire was administered to the assembling plants and some independent CKD kit importers. They were asked to rank the six selected components interms of quality, price and reliability of supply. The idea is to compare the locally-made components with importable substitutes. The results are presented in chapter four.

3.4 RATE OF CAPACITY UTILIZATION

Capacity utilization refers to the comparison of actual to potential output. If utilized capacity is low, then factors of production are not used efficiently and the industry is operating where the average cost of production is not minimum.

Various approaches have been used to measure the rate of capacity utilization in both developed and developing countries.

The most common are the econometric approach, the survey approach, and the time-based measures.

Econometric approach

The econometric approach uses secondary data on either capital output ratio, output time series, measures of factors of production or the level of unemployment. Measures of factors of production are used to estimate a production function. The econometric approach involves an established relationship between the measures chosen and the rate of capacity utilization.

The method using level of unemployment may involve either establishing a relationship between excess capacity in industrial plants and level of unemployment or capacity multiplier procedure[9]. In case of the former the presence of idle men is associated with idle capital. For example O un's law which states that a 1% change in unemployment was associated with a 3.2% change in level of output uses this approach for U.S.A. The latter identifies the most relatively scarce factor which forms the index. The capacity multiplier is then defined as relationship between underutilized capacity and unemployment rate of the scarce factor.

Unfortunately the use of unemployment data is at present not possible in Kenya and other LDC's. This is because of lack of appropriate unemployment statistics. Secondly this approach relies on the correlation between capacity utilization and only one factor unemployment which may not be perfect.

The use of the capital-output ratio gives weight to capital as an important factor of production. Undepreciated capital stock are obtained and with output form the basis of analysis. The weaknesses in this method are:

- Capital output ratios cannot be determined uniquely by the rate of operations[10]

- Most developing countries have the problem of unemployment and hence tend to stress labour intensive methods of production. Since the increase in capital-output ratio may result from using more capital intensive items at the cost of employment of labour, its use can lead to contrary interpretation especially in LDC's.

Methods based on output time series are mainly based on trends and peaks of production in various industrial divisions over a period of time. An example is the Wharton School of Econometric Unit[11]. Under this method seasonally adjusted monthly output values of various industrial division are aggregated into quarterly figures which are chartered. Peaks selected for inspection are defined as capacity. A trend line joining intervening peaks describes capacity for the period. interpolation is used to determine capacity for periods after a peak but preceeding the next peak. The major weaknesses here are:

1. Peaks which are regarded as full capacity utilization points may infact be points of underutilization.

2. It is hard to compare utilization rates between business cycles because intensity of each peak is unknown.

3. Peaks may represent different utilization rates.

4. Aggregation of peaks at industrial level is biased because not all firms will peak at the same point in time.

5. Output is treated as a time variable whereas it is known that other variables can affect it.

This method is thus not appropriate for the Kenyan situation.

The use of a production function involves measuring the factors of production. Its major weakness is that some variables cannot be measured easily. For example, actual output for each sector is defined by a Cobb-Douglas relationship as:-

$$X_t = Ae^{rt} L_{et}^{\alpha} K_{ut}^{\beta} V_t \qquad \ldots\ldots\ 1$$

where

X_t - Actual output at time t

L_{et} - Manhours employed at time t

e^{rt} - Proxy for technical change

K_{ut} - real capital utilized at time t

V_t - disturbance term at time t.

Full capacity output is defined:

$$X_{it} - \bar{A}e^{\bar{r}t}L_t^{\bar{\alpha}}K_t^{\bar{\beta}} \qquad \ldots\ldots 2$$

where

X_{it} - full capacity (real) output at time t

L_t - manhours available at time t (Total number of hours that can be worked by labour that can be available to the firm)

K_t - fully utilised (real) capital at time t

$e^{\bar{r}t}$ - proxy for technical change.

The rate of capacity utilization can be got by comparing 1 and 2, that is if all the variables can be measured easily. Whereas it is possible to know the number of manhours employed at a particular time, it is difficult to estimate manhours available at a particular time. It is also difficult to measure real capital utilised at a particular time. Therefore the use of such a production function is made inappropriate by the difficulty in determining K_{ut} in (1) and L_t in (2) for each industry.

Survey Approach

Survey approach uses primary data to estimate the rate of utilized capacity. Firms are asked about their past and expected operations. One example is the McGraw-Hill approach which has been used annually since 1947 to study firms selected from 15 major industrial classifications in the U.S. To estimate the capacity utilization rate, firms are asked to:

- Compare their capacity (measured in physical volume) at the end of the current year and that of previous year.

- give the rate at which they were actually operating

- give rates at which they prefer to operate.

To obtain an industry-wide estimate for utilized capacity individual firms' estimates are aggregated using employment weights. The advantage of this approach is that the questions are answered by senior people who are likely to give correct information. This approach howerver has two major weaknesses i.e.:

(i) Capacity is not well defined. The firms only give their maximum output during "normal" working time as their capacity.

(ii) The results are computed based on large firms, and hence must be biased. This approach is not ideal for developing countries where small firms exist side by side with large firms.

Time-based measures

Time-based measures of capacity are a special type of survey approach. Managers are asked the number of hours of operation per day, number of days of operation per year, number of shifts per day and number of labourers per shift in each plant. From these, capacity utilization rates can be estimated for each firm. For the industry figures, the firms' rates are weighted by number and size of shifts and aggregated.

In Kenya, Coughlin's version of a time-based measure has been used in studies of foundries and metal engineering workshops, pharmaceutical and the handtools and cutlery industries by Coughlin (1982), Owino (1985), and Kerre (1985), respectively. This approach, which also considers a slackness variable showing the additional work that could be accomplished by intensive use of the existing labour and capital, is termed the weighted average time-based measure. It is expressed as:

$$U = \left[\frac{1}{\sum_{i=1}^{n} \sum_{s=1}^{k} L_{is}} \right] \sum_{i=1}^{n} \left[\frac{\left(\sum_{s=1}^{k} L_{is} \right) \left(\sum_{s=1}^{k} \frac{L_{is} H_{is}}{L_{is}^{*}} \right)}{(1+A)H} \right] \quad \ldots 3.4.1$$

where

U - rate of capacity utilized

i - 1,2...,, n - Number of firms visited

s - 1,2,...,k - number of shifts per day

L_{is} - Number of labourers in plant i during shift s

L_{is}^{*}- Number of labourers in the biggest shift

A_i - slack variable in plant i (A=0 when there is no slack).

H - potential maximum hours entrepreneurs are willing to operate per week.

The present study uses this method to calculate the rate of capacity utilization. Where a firm produces many different components and confines each to a department, rate of capacity utilized will be calculated for a department or departments that manufacture any of the six selected components.

3.5 EFFECTIVE RATE OF PROTECTECTION AND EXPORT PROMOTION

Protection can be defined briefly as any measure that reduces or blocks free trade. Two types of protection can be recognized as price and non-price. The latters' instruments have no direct "revenue effect" to the government unless import licences are sold. On the other hand, price instruments have direct "revenue effect" on imports in the government. The most common price instrument is the nominal tariff. All other quantitative restrictions can also be expressed in ad valorem tariff equivalent, that is, they can be expressed as a percentage of the import value (CIF price). The nominal tariff on final product or ad valorem does not adequately measure the degree of protection since value added is not considered. A better measure is the effective rate of protection defined as the percentage excess of domestic value added over world market value added. To calculate it, Balassa's[12] method which assumes a partial equilibrium can be used as follows:

$$\left[\frac{(1+r_j) - \sum_{t=1}^{n} A_{ij} (1+r_i)}{1 - \sum_{t=1}^{n} A_{ij}} \right] - 1 \quad x100 \quad \ldots 3.5.1$$

where

ERP_j - effective rate of protection

r_j - nominal tariff rate on final commodity or ad valorem tariff equivalent on final commodity j (which ever is larger)

r_i - nominal tariff on intermediate input i or ad valorem tariff equivalent (which ever is larger)

A_{ij} - share of input cost of output at the free market prices (input-output coefficient).

As of June 1987, all the components selected for study had been included in the legal notice No. 22 of 1980's list of those that must be used by assemblers. Improtation of these components is banned. It turns out that protection for the selected components is a quantitative one and hence r_j in equation 3.5.1 does not exist. In the case where imports are limited by quantitative restriction, tariff equivalent (r_j) can be calculated as the excess of domestic over foreign prices. In the case of the selected components importation is prohibited not limited. The analysis of protection is seen in the light of a ban. The effect of the ban is tantamount to a fully protective tariff. The producers of the selected components together with those of others appearing in legal notice no. 22 of 1980 face no legally accepted competition from imported products. In addition there might be no way of knowning prices in foreign countries except through CKD deletion allowance which is not reliable due to distortions. The analysis of protection can therefore just involve identifying the tariffs in intermediate inputs and determining their effect on prices of finished items. For example where imported inputs are used in the manufacture of any item, import licence must be sought. Any cost associated with import licence must be reflected in the price of the final product.

Export Promotion

In June 1985 export compensation scheme was increased to 20% so as to stimualte exports. The net effect of export compensation varies from industry to industry and depends on: tariff rates on imported inputs, interest cost of waiting for export compensation, and value added in each industry.

To measure the effect of export compensation, effective rate of export promotion (discrimination) is used[13]. This is defined as the "export compensation minus unrefunded duties on imported raw materials after considering the implicit interest incurred by the manufacturers due to the long wait before receiving the export compensation and sales tax refund divided by value added in international terms"[14]. In Kenya the delay on export compensation is assumed to be equal to four months while the interest is assumed to be 16% p.a.[15].

3.6 ECONOMIES OF SCALE

Economies from mass production refer to benefits that accrue to firm as a result of expansion. These result from using the existing factors of production intensively. But expanding output is not always benefitial to all firms. This depends on the current size of each firm and the rate at which capacity is utilized. For example whereas some firms can double their output without necessarily doubling the average cost of production, others cannot achieve this.

Economies of mass production can as well be used to show a firms' potentiality to expand considering the behaviour of average and marginal costs. The marginal cost curve must cut the average cost curve where the latter is at its minimum. This point of intersection shows the size at which the firm sees no need to change its level of output. This is the point where a firm fully utilizes its capacity. Average cost curve will decline so long as the marginal cost curve is below it regardless of whether the latter is rising. It therefore shows that when output is increased yet average cost of production curve declines, then that particular firm has not reached its optimum output with its current capital and hence has the potentiality of expanding and still earn profit, that is if it is assumed that unit selling price is greater than average cost.

To investigate the potential to expand and reap economies of scale, firms were asked about their cost structure at the current level of output and also to project it at either double or one and a half the current volume of output (whichever is possible to the firm). To avoid divulging the shilling amounts of the expenditure, all costs are expressed as a percentage of turnover. The comparison of projected and current cost items each expressed as a percentage of turnover show the direction of changes of average and marginal costs should output increase. The sum of the incremental costs will show the total percentage change in costs when production either doubles or is increased by half the current level of output.

3.7 DATA LIMITATIONS

Though all the motor vehicle assemblers were interviewed, six manufacturers of the selected components were not available for interviews. Two of the six refused the request to visit them since they were reorganizing their operations. Further follow up by telephone did not yield any dividends in the case of three others who failed to reply to the letters of introduction. Silentflow LTD was very straight foward and declined to accept the request to a visit stating that it is in private business hence cannot give any information. Some component manufacturers accepted the research visit, however declined to give information on costs fearing that the information could leak to their competitiors. Despite these limitations, most firms interviewed responded well to the questions. However all requested not to be quoted on matters pertaining to government policies especially import licencing.

CHAPTER FOUR

EMPIRICAL RESULTS AND PROOF OF HYPOTHESES

4.1 INTRODUCTION:

This chapter applies the methodologies in chapter three and uses data collected during the interviews to prove the research hypotheses. Later the chapter analyses the acceptability of the selected components.

4.2 PROOF OF HYPOTHESES:

Hypothesis One

The auto-ancilliary industry in Kenya seriously underutilizes its productive capacity.

All except one firm interviewed operate only one shift of eight hours a day for five days a week. The exceptional firm works two shifts a day for seven days a week with allowance for overtime, the average working time per week is about 45 hours. Nevertheless, the firms concur that the type of machinery they have can be used to run three shifts of eight hours each a day for seven days a week (see table 4.1) if sufficient demand existed. Labour productivity at night, premium for night work, and ability/offer transport at night are viewed as minor or non-problems.

Using the weighted average time-based measure to calculate the rate of capacity utilized, the auto-ancilliary industry utilizes only 27% of its capacity assuming a maximum of 168 hours per week. Using equation 3.2.1 and substituting 1 for i, the main determinant of the rate of capacity utilization becomes the current production time compared to the maximum hours each firm can utilize should demand exist. All the firms interviewed maintain that mere reorganization without increasing labour or and machine cannot substantially lead to further increase in production beyond their output.

TABLE 4.1

ACTUAL AND POTENTIAL PRODUCTION TIME IN COMPONENT MANUFACTURING FIRMS (1987)

	NO OF SHIFTS WORKED PER DAY	MAXIMUM NO. OF SHIFTS THAT COULD BE WORKED PER DAY	TOTAL NO. OF HOURS WORKED PER WEEK	TOTAL NO HOURS TH. COULD BE WORKED P. WEEK
A	2	3	98	168
B	1	3	44	168
C	1	3	44	168
D	1	3	46	168
E	1	3	45	168
F	1	3	46	168
G	1	3	45	168
H	1	3	53	168
I	1	3	45	168
J	1	3	45	168
K	1	3	45	168
L	1	3	45	168

It should be noted that 100% capacity utilization is theoretical since each firm must anticipate an increase in market demand however a 27% rate of capacity utilization implies massive resource underutilization even though rarely do LDC's use more than 60% of their capacity.[1] Reasons for underutilization of capacity are discussed later in the chapter.

It can therefore be concluded that since most firms in the auto-ancilliary industry work only one shift yet their machines can permit 3 shifts of eight hours each, they seriously underutilize their productive capacity.

Another manifestation of underutilization of productive capacity in the auto-ancilliary industry is that the Kenyan firms in this industry could achieve economies of scale with increased output. To demonstrate the exist/of economies of /ance scale, the cost structures in some firm are presented in tables 4.2, 4.3 and 4.4.

TABLE 4.2

COST STRUCTURE OF A LEAF SPRING MANUFACTURING FIRM IN KENYA (ALL COSTS PRESENTED AS PERCETAGE OF SALES) AT TWO PRODUCTION LEVELS.

COST ITEMS	COSTS AT CURRENT VOLUME OF OUTPUT	% INCREASE IN COSTS IF OUTPUT WERE DOUBLED	TOTAL INCREASE IN COSTS
RAW MATERIALS	56.64	100	56.64
WAGES	11.21	80	8.968
MACHINERY REPAIRS	3.8	100	3.8
POWER & WATER	4.3	80	3.44
DEPRECIATION	7.65	0	0
INTEREST	10.45	40	4.18
SALARIES	3.96	40	0.192
OTHER EXPENSES	3.96	25	0.99
TOTAL	98.49		78.21
PROFIT	1.51		
TURNOVER	100.00		

$$TC = 98.21$$

$$\delta TC = 78.21$$

$$\frac{\delta TC}{TC} = \frac{78.21}{98.21} = 79.4\%$$

TABLE 4.3

COST STRUCTURE OF A FILTER MANUFACTURING FIRM
(All Costs presented as percentage of sales) AT TWO PRODUCTION LEVELS

ITEM	COSTS AT CURRENT VOLUME OF OUTPUT	% INCREASE IN COST IF WERE DOUBLED	TOTAL INCREASE IN COSTS
RAW MATERIAL	50	100	50
WAGES	10	0	0
DEPRECIATION) INTEREST) OTHERS)	15	0	0
TOTAL	75		50
PROFIT	25		
TURNOVER	100.00		

$$TC = 75$$

$$\delta TC = 50$$

$$\frac{\delta TC}{TC} = \frac{50}{75} = 66.6\%$$

TABLE 4.4

COST STRUCTURE OF A BATTERY MANUFACTURING FIRM (All Costs presented as percentage of Sales) AT TWO PRODUCTION LEVELS

	COSTS AT CURRENT VOLUME OF OUTPUT	% INCREASE IN COST IF OUTPUT WERE INCREASED BY 50%	TOTAL INCREA IN COSTS
RAW MATERIAL	45.00	50	22.50
SALARIES	2.40	5	0.12
WAGES	7.60	50	3.8
DEPRECIATION	1.30	0	0
ENERGY & WATER	1.60	25	0.4
TECHNICAL ASSISTANCE & ROYALTIES	3.00	50	1.5
MAINTENANCE & OTHERS	30.60	50	15.3
TOTAL	91.50		43.6
PROFIT	8.50		
TURNOVER	100.00		

TC = 91.5

TC (when output is increased by 50%) = 43.6

$$\frac{TC}{TC} = \frac{43.6}{91.5 \times 0.5} = 95\%$$

Table 4.2 and 4.3 show that for those firms the current volume of production of leafsprings and filters can be doubled with the Unit Costs changing by only 79.4% and 66.6% respectively instead of by 100%. The firms can expand and reap considerable economies of scale because their incremental costs are lower than the average costs. This proves that they are currently underutilized. In table 4.4 only 50% expansion was used because apart from being big and diversified, the firm's rate of capacity utilization is high since it works two shifts a day for seven days a week. However the table shows that if the battery manufacturing firm expands production by half its current output, the unit cost of production will change by 95% instead of 100%. It therefore proves that despite using two shifts the firm still underutilizes its productive capacity though it cannot currently double its output with minor reorganization.

REASONS FOR CAPACITY UNDER UTILIZATION

In order to ascertain the reasons for underutilization of production capacity, the motor vehicle component manufacturers were asked to rank eleven reasons using VISN procedure.

V - Very Important
I - Important
S - Somewhat Important
N - Not Important

The reasons are:-

A - Difficulty in obtaining raw materials
B - Plant breakdown
C - Shortage of Skilled Manpower
D - High Cost of Inputs
E - Production Inbalance and Bottlenecks
F - Too many vehicle makes and models
G - Competition from Importers
H - Lack of adequate demand
I - Poor attitudes of assemblers
J - Improper Planning and Policies by Government
K - Delays in obtaining Import Licences

A to F are supply factors while G to I are demand factors. J, and L are planning factors resulting from various Government policies.

By grouping VIS as important, the single most important reason for underutilization of capacity is the existance of too many vehicle makes and models. Having many vehicle models often requires different sizes and types of similar components. In some cases, the same make and model of a vehicle can have different components depending on the target market. For almost every different model of a component, different tooling must be used. This may involve a different die or jig. Tooling is very expensive hence some firms cannot afford for all the models. Firms that afford the tooling must however waste some production time when changing from one item to the other. This reduces the time for actual production thus firms have to operate below their optimum.

Among the eleven reasons for capacity underutilization, production imbalances and bottlenecks between sections and poor attitude of assemblers were ranked least. From individual firms, poor attitude of assemblers is a constraint on their attempt to penetrate the original equipment market. However in Kenya the replacement market accounts for most of the sales. Some component manufacturers have not even approached the motor vehicle assemblers. Ranking attitudes of assemblers as a less important factor therefore just implies that since the original equipment market constitutes the minority of total turnover of most of the component manufacturers, attitudes of assemblers is not a major determinant of production capacity. The ranking of all the factors is shown in table 4.5.

HYPOTHESIS TWO

> Firms in the auto-ancilliary industry are under protected. High tariffs rates on intermediate inputs and uncertainties associated with getting import licences make the cost of production high and unpredictable.

For the six components studied, importation is banned due to the availability of local sources. On others, importation is allowed for items as part of CKD Kit which attract a 35% tariff. The tariffs on imported inputs for the selected components range between 20-55% as shown in table 4.6. Manufacturers of components rely heavily on imported inputs. Infact some rely entirely on imports, and hence the import content of production is high. Referring to Balassas' partialequilbrium model for calculating effective rate of protection (equation 3.3.1) all variables except r_j can be calculated because there is a ban on importation of finished products to compete locally-produced components. A ban is equivalent to a perfectly protective tariff. The alternative for r_j in case of trade restriction is the international price as a fraction of domestic price of each component. However this is not available for selected components.

It can therefore be concluded that using the Balassa's partial equilbrium method effective rate of protection for the six components studied could not be determined due to lack of data for an important variable r_j. We cannot therefore conclude that these firms are under-protected. Again the studies on the six components cannot reflect the effective rate of protection for the auto-ancilliary industry in general.

For the producers of the six components studied, the focus is mainly on the tariff on inputs, the cost of obtaining import licences, and the effect of these on production. The import content of most components is between 90-100% of the cost of raw materials and raw materials form about 50% of the total cost of production for the various components (see table 4.2-4.4).

TABLE 4.5

REASONS FOR UNDERUTILIZATION OF PRODUCTION CAPACITY

RANK		% OF
	DEMAND REASONS	RESPONDENTS
1	LACK OF ADEQUATE DEMAND	70
2	COMPETITION FROM IMPORTERS	30
3	POOR ATTITUDE OF ASSEMBLERS	20
	SUPPLY REASONS	
1	TOO MANY VEHICLE MAKES AND MODELS	90
2	DIFFICULTY IN OBTAINING RAW MATERIALS	80
3	SHORTAGE OF SKILLED MANPOWER	30
4	HIGH COST OF INPUTS	30
5	PLANT BREAKDOWN	30
6	PRODUCTION INBLANCES AND BOTTLENECKS BETWEEN SECTIONS	20
	PLANNING REASONS	
1	DELAYS IN OBTAINING IMPORT LICENCES	80
2	DIFFICULTY IN OBTAINING FOREIGN EXCHANGE	80
3	IMPROPER PLANNING AND POLICIES BY GOVERNMENT	50

The imposition of tariffs on inputs therefore substantially increases the cost of production even though the effect on a component's competitiveness with imports is unknown..

The component manufacturers have to undergo an additional cost due to the bureaucracy of getting licences for importing inputs. The manufacturers estimate that it takes about three months to get licences. They have to expend their time and this makes production expensive. The component manufacturers must therefore accumulate stocks of raw materials that they can use for about six months.

TABLE 4.6

MAJOR INPUTS FOR THE MANUFACTURE OF MOTOR VEHICLE COMPONENTS (BATTERIES, FILTERS, BRAKE PADS AND LEAF SPRINGS)

SITC	CCCN	NAME OF FINAL PRODUCT & INPUTS	TARIFF %	SAL TA. %
		FILTER		
667-913	73-13-053	CENTRE TUBES BLANK	25	-
583-410	39-02-030	PVC LIQUID	20	-
674-913	73-13-053	END CAPS	25	-
749-990	84-65-000	SEALING RINGS	30	17
749-920	84-64-000	END SEALS	35	17
641-819	48-07-029	FELT	30	-
679-300	73-40-030	CANISTER	25	17
641-819	48-07-029	PAPER PLEAT	30	-
678-209	73-18-209	CENTRE TUBES COMPLETE	30	17
678-309	73-18-029	ANTI DRAIN TUBES	50	17
		BRAKE PAD		
663-820	68-14-00	FRICTION MATERIAL	25	17
		BATTERY		
NA*	NA	RUBBER	30	17
		LEAF SPRING		
NA	NA	SPRING STEEL	20	17
NA	NA	BUSHES	35	17

* N.A. - not available

SOURCE - Own Survey

EXPORT PROMOTION

At 20% export compensation rate, the net effect of government's fiscal measures to stimulate exports are estimated for four products as shown in table 4.7. Out of the six selected components, exhaust manufacturers purchase from local firms all of their raw material inputs. Data on the cost structure of a radiator manufacturing firm was not got.

TABLE 4.7

EFFECTIVE RATE OF EXPORT PROMOTION

	IMPORTED RAW MATERIALS (INTERNATIONAL) PRICE	IMPORT DUTIES ON INPUTS	SALES TAX	VALUE ADDED (DOMESTIC)	EFFECTIVE RATE OF EXPORT PROMOTION
	Col.1	Col.2	Col.3	Col.4	Col.5
LEAF SPRING	.5212	.20	.17	.4788	14.3%
FILTER	.435	.30[(a)]	.17	.5652	14.4%
BRAKE PAD	.444	.25	.17	.556	14.92%
BATTERY	0.386	.30	.17	.614	15.3%

NOTES: (a)These calculations are based on the cost structures for each industry. Adjustments using import duties have been made to get Co.1.

(b) Import duties used in Co.2 reflect those on the most abdundantly used imported raw material.

(c) Export price is assumed to be lower than domestic price by the amount of export promotion only.

(d) Since International value added was not known, the domestic value added was used.

HYPOTHESIS THREE

Unnecessary product differenciation in the auto-ancilliary industry has led to low production runs which hinders economies of mass products.

EFFECTS OF PROLIFERATION OF VEHICLE AND COMPONENT MODELS

By February 1987, Kenya's four assembly plants of General Motors Limited, Associated vehicle Assemblers Limited, Leyland (K) Limited, and Fiat (K) Limited, assembled about 26 different vehicle makes in about 88 models as shown in table and appendix 1. Many more makes in many models are imported especially by embassy officials and Kenyans coming home from foreign countries. Lack of standardization of components between vehicle models exists, and to satisfy the increasing fleet of vehicles in many models, the auto-ancilliary industry has to manufacture for each and every model especially where importation of the component is banned. This causes problems to auto-ancilliary product producers as shown by the following evidences.

Most components like leafsprings, exhaust system,/brake pads /and are shaped using dies. Even two almost similar products must have different dies. To satisfy the entire market requires many different dies and toolings. This can be expensive. For example, in brake pad making, a set of tooling for a new model costs about KShs. 10,000/-. For any firm to make profit, this initial investment must be recouped. This is only possible if either many brake pads are manufactured or if the depreciation for the toolings per unit is fixed high. With very many vehicle models and limited demand for each, the market of each component model is subdivided hence each die is used to produce few items. As a result the average cost of producing a pair of brake pads is high.

At present the total Kenyan market for brake pads is about 750,000 sets per year. Considering that this includes all different types and also that various firms share the limited market, a single firm ends up producing each model of brake pad at a comparatively lower volume. This is a problem because the firms have to sell at high prices to reluctant assemblers and users. To the economy it is reflected in high costs of new motor vehicles and their maintenance. This drains resources from other areas.

In the case of leafsprings, about one hundred different models are currently made in Kenya. The number of each model of leafspring made depends on the size of the market for the vehicle model into which the type of leafspring fits. Occasionally, only a limited number of leafsprings are made for certain models of vehicles. In this case the tooling cost is spread over few items and hence the average production cost must be high. It was estimated by one leading leafspring manufacturer that if leafsprings could be made for only seven trucks per unit cost of output would be 15-20% less.

The same problem is encountered intensively with exhaust systems. One model of vehicle can have different exhaust systems depending on the market it was intended for. For example the shape and size of an exhaust system of a vehicle intended for a market in Europe is different from that of the same model car intended for Kenya. Importation of reconditioned cars meant for other market assists in proliferation of component models. At Autoperformance Limited a count by the assistant production manager revealed that about 1,600 types of exhaust systems are made. The problem is compounded because a silencer which is part of the exhaust system is made using several dies and jigs. Thus more dies and jigs exist than the number of models, and hence make the tooling cost higher than when only few models are manufactured.

Proliferation of vehicle models does not affect all component producers uniformly. For example, batteries are standardized. Filters only need different types of raw materials but the same machinery can be adjusted to cut and roll different sizes. Though radiator manufacture needs dies, for certain stages same machines can be used for a wide range of certain radiators e.g. cutting and perforating copper sheets. However in the longrun standardization leads to low motor vehicle costs and high demand for vehicles, component producers could increase their output and hence engage in large production runs.

Proliferation of component models causes storage problems for their producers and hence increases storage costs. Motor vehicle components production is a market oriented venture hence most firms operate in industrial area of Nairobi where space is a problem and hence rents are high. One manufacturer of leaf-springs reported that he has about one year's stock of assorted leafsprings stored as buffer stock should demand change. He admitted that the buffer stock would be lower and hence occupy a smaller space if vehicle and component models were fewer. A manufacturer of exhaust pipes in the industrial are of Nairobi complained of rent he pays. Much of space is either occupied by raw materials (metal sheets) or jigs leaving a smaller space for production. He anticipates moving out of town if money can be raised to buy a piece of land. Since most firms interviewed produce mainly for the replacement market where customers need not place orders before components are produced, the component manufacturers must have stocks of finished components for many models. This adds to the space problem and inventory costs.

In the components industry, most raw materials are imported. Different models sometime mean completely different raw materials. For example in filter manufacture, different papers, caps, and metal sheets are used. Firms not only face the problem/choosing /of the proper mix of raw materials but also must order in sufficient quantities. Most firms interviewed had between three and six months stock of raw materials in their stores. This adds to space problem.

Production of many different component models wastes valuable production time. Machines have to be adjusted and set-up to accomodate different models. This adjustment time varies with products from few seconds to about one hour. However small set-up time is, it must/considered /be interms of opportunity cost. For leafsprings the change over time is about one hour for a complete range of leafsprings, but about one hundred types are made. About one hundred production hours are diverted to adjusting the machines. This is equivalent to about two weeks work in a firm operating one shift in a day. This estimate even underestimates the real condition for it assumes that changes are not very frequent. Total output could increase if the number of models are reduced/to less frequent changes /due and low set-up and changing times.

4.3 ACCEPTABILITY OF LOCAL COMPONENTS

The four motor vehicle assemblers can be classified as contract assemblers or own assemblers. Contract assemblers receive completely - knocked - down kits from franchises and assemble the knocked - down units into specific vehicle makes and models as determined by the franchise holders who are agents of foreign vehicle manufacturers. Own assemblers, assemble vehicles for distribution to customers through motor vehicle dealers who sometimes own shares in the assembling plants. Leyland and General Motors in addition to own assembly do some contract assembling. The major difference between contract and own assembling apart from the distribution of vehicles is that own assemblers can on behalf of their mother multinational Corporations, choose the source of the component. In the case of contract assemblers, the choice of source and quality of component is exercised by the franchise holder often acting on behalf of a foreign vehicle manufacturer.

All the local assemblers use locally-produced leafsprings, batteries, radiators, exhaust pipes and silencers as at February 1987. General Motors used, in addition to the enumerated components, filters and brake pads made locally. Moreover, General Motors is the only assembler that is actively searching to use more local components for their vehicles. These include: fuel tanks, wheel rims, cross members and shock absorbers. Though they have not started using these components officially, the interviewer was shown a vehicle fitted with locally made cross members almost ready for testing. In addition, General Motors, sometimes, offers free engineering services and advise to local manufacturers of motor vehicle components to improve the quality and acceptability of the components.

Fiat and Leyland admit that in some cases imported components are preferred even though local ones are or could be available. Their preferences is based on quality and price difference between local and imported components. To assess the acceptability of the six selected components, the assemblers ranked as too low, low, about right or high the quality of each of the selected components. AVA declined to respond because it is only a contract assembler. As contract assemblers their official role is to put together the components they are given by CKD importers irregardless of the source:

TABLE 4.8

QUALITY RANKING OF SELECTED LOCALLY MANUFACTURED COMPONENTS BY VEHICLE ASSEMBLERS IN KENYA (FEBRUARY 1987)

COMPONENTS	NUMBER OF RESPONDENTS			
	TOO LOW	LOW	ABOUT RIGHT	HIGH
RADIATORS	-	2	-	1
LEAF SPRINGS	-	-	2	1
EXAUST SYSTEMS	1	2	-	-
BATTERIES	-	2	-	1
FILTERS (OIL & FUEL)	-	-	2	1
BRAKE PADS	-	-	2*	1

* Even though only G.M. was using brake pads by then, other assemblers reported about the quality based on why they dont use it.

The other criterion for acceptablity of the local components as stated by the assemblers is the price of locally-made components as compared to CKD deletion allowances. Demand for vehicles in Kenya is about 10,000 units per year. This is low compared to demand in developed countries. This number is divided among very many models which makes the average production cost to be high. The assemblers use CKD allowances as a basis of comparison with local selling prices. To show this discrepancy in prices Supplies Manager of one vehicle assembler in Kenya estimated that prices of locally-made components average between 500-600% more than CKD deletion values of such components. Another vehicle assembler estimated that local components are on average about three times as expensive as production costs of such components in the industrial countries.

In summary the acceptability of local components is determined directly or indirectly by the motor vehicle manufacturers and by the government through its policies that ban or restrict imports of certain components. Through their agents, the motor vehicle manufacturers require that high quality is maintained. Component manufacturers have to convince the motor vehicle manufacturers or their agents about the quality of the local components by sometimes sending locally-manufactured components to overseas motor vehicle manufacturers for testing. Only those that pass the test can be used. Sometimes the component manufacturers acquire a franchise from established overseas component manufacturers of international reputation so as to gain acceptability from the vehicle manufacturers.

Reluctance of motor vehicle assemblers to use locally-made components can be summarized as follows:-

(i) Only one assembler ranked all locally-made components as being of high quality even though all assemblers assemble for a similar environment (see table 4.8)

(ii) Two out of the three assemblers admitted that they prefer imported components even though local ones exist. A CKD importer explained that the rejection rate is high for certain components since they fail tests by overseas vehicle manufacturers.

(iii) All assemblers concur that the standards by KBS are not adhered to and that KBS does not enforce them strictly. This is why the assemblers and CKD importers had to set their own technical Laison Sub-committee to monitor standards of locally produced components.

Evidently, the assemblers purchase locally manufactured components as a last resort due to the ban on importation of such products.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

This chapter presents the conclusions of the study and highlights the policy options to promote the auto-ancilliary industry in Kenya. The recommendations are both general for the industry as a whole and specific to various firms.

5.1 CONCLUSIONS

The auto-ancilliary industry in Kenya seriously under-utilizes its capacity in that it operates at below 50% of its normal capacity. It therefore stands to gain if production can be increased by intensively utilizing the existing capacity. As examplified by potentiality of various firms to reaping of economies of scale,it has been shown that certain firms within autoancilliary industry can double their output and yet increase production costs by less than 100%.

For the producers of the six components studied, a ban has been imposed on competing imports. The ban is tantamount to perfectly protective tariffs. Tariffs on inputs range between 20 - 55% with a sales tax of between 0-17%. The sales tax is refundable and therefore has no protective effect. In addition to the tariff on inputs the manufacturers incur storage costs for raw materials and sometimes finished products. Because of delay in getting import licences and foreign exchange, most component manufacturers store raw materials to be used for six months during any period. Further expenses considered illegal but very necessary are incurred by component producers to counteract the red tape in the licence issuing offices. All these costs make the prices of components high. This promotes the existence of black markets. The question of inadequate protection for the six components is not relevant. It is a matter of so many barriers to importation system that renders component production to be expensive.

For the components that may still be imported inside CKD kits, the difference between the tariffs on finished products and inputs is too small to protect them. Finished products in a CKD kit attract a 35% tariff on their cif prices; yet tariffs on Intermediate inputs for the manufacture of most vehicle components is between 20 - 55%.

Proliferation of vehicle models and lack of standardization of parts is a problem to the economy. It leads to low production runs per component and high average production costs. In addition it leads to importation of many assorted inputs and increases storage costs.

Motor vehicle assemblers in Kenya and CKD kit importers are either subsidiaries or agents of motor vehicle manufacturers based in industrial countries. Their powers to chose where to purchase original components is restricted by their parent firms and the policies in the country where vehicle assembling is done. Assemblers are reluctant to use locally-made components unless the local products pass quality tests either in overseas vehicle manufacturers depots or by the technical laison sub-committee. The latter is mainly when the importation of a particular component is banned.

After June 1985, the government policy of increasing export compensation is a good gesture to stumulate export promotion for the auto-ancilliary industry. Out of the six components studied, four have effective rates of export promotion between 14.3 - 15.3%. However firms are sceptical about delays on export compensation and refunds on sales taxes.

5.2 RECOMMENDATIONS

The following are the recommendations derived from the study of the selected components on how the performance of the auto-ancilliary industry can be improved:

1. Increasing aggregate demand

   For the six components studied, the existing firms can satisfy the domestic demand even though they operate below capacity. The demand is constrained because many people in Kenya cannot afford cars and the market is diversified. This forces manufacturers to make components for many models. Some models have few cars on Kenyan roads.

To increase demand, component producers can be encouraged to penetrate the foreign markets. For example, Tanzania and Uganda still import completely - Built-up vehicles and have to import or manufacture components for the maintenance of the imported vehicles. By liberalizing the export procedures to encourage local manufacturer of components, the demand can be increased in the two named countries.

Many component producers qualify under the PTA to export to member countries. The major competitor within the PTA members is Zimbabwe in Central Africa. Zimbabwe is land locked and has no direct transport link with either Uganda or Tanzania, since motor vehicle components are bulky transport cost must be substantial and hence with a higher volume of production leading to lower average production costs, Kenyan firms should be able to get market in Tanzania and Uganda. Manufacturers of components such as Autospring and R.B. Shaw LTD said that they can compete effectively in Tanzania and Uganda. Infact many component manufacturers have either received orders or have ventured into foreign markets and found it good. The government should therefore try to enlarge the market for vehicle components by encouraging exports.

2. Regulating the number of entrants into the industry

Like all developing countries Kenya has scarce resources and the major role of planning is to allocate them effectively and efficiently. Diverting would-be investors from a congested industry to less congested ones is an advantage to the economy. The auto-ancilliary industry though oligopolistic, serves the motor vehicle industry whose demand averages about 10,000 units per year. This is unlikely to change substantially. Even if the demand for motor vehicles increases, component manufacturers could use their idle capacity to cater for the increase. Moreover as shown in chapter four, some firms can double their output and reap economies of scale. In the case of leaf-springs the two firms, auto-spring and autoancilliaries alone can satisfy the market even when underutilizing their capacity. The same is true Batteries, filters (oil and fuel), exhaust pipes and silencers, and brake pads, whose existing firms can satisfy the market and any additional firm in the industry would share the limited market. Some examples to show that new firms should be restricted from entering auto-ancilliary industry are as follow:

- The average demand for leafsprings is estimated to be between 3000-3500 tons per year. Autospring and Autoancilliaries operating one shift each produce about 3200 tons per year thus supplying almost the entire local market. But with the present facilities and about 150 additional labourers operating three shifts per day, just one firm could produce about 2,000 more tons of leaf-spring per year. The two firms could produce about 10,000 tons of leafspring per year with some reorgnaization. This amount is equivalent to three times the current local market demand. Regulation of entry into this industry can thus divert scarce resources into other need activities.

- The local demand for batteries is estimated at about 157,000 units per year. Currently one firm produces about 83% of the total demand. This firm operates only 2 shifts and is capable of doubling its output before experiencing diseconomies. This firm alone could satisfy the entire local market. Other firms producing batteries share only 17% of the local market and any additional firm will not be an advantage to the economy.

One major shortcoming of restricting entry to auto-ancilliary industry is that is would strengthen the powers of the oligopolies. The few existing firms would collude and hike prices. This however could be eliminated if the government could monitor pricing of items closely. One motor vehicle assembler lamented that no process for controlling profits exists in auto-ancilliary industry and that in a protected economy like Kenya, component manufacturers can adopt a take-or-leave attitude. The motor vehicle assemblers suggested price control for components and involvement of all interested parties in quality analysis of vehicle components.

3. Setting National Standards

Kenya Bureau of Standards (KBS) sets and supervises the standards of all items in Kenya. Some KBS standards that pertain to auto-ancilliary industries are arbitrary and unenforceable. Infact some standards don't take safety into consideration. Three examples show that standards are arbitrary.

- Exhaust systems are ranked to have low quality by assemblers because exhaust system manufacturers use inferior metal sheets. The KBS standards however do not describe the type of steel required, instead standards are on the gauge of the metal sheets to be used. All exhaust system manufacturers agree that Alluminized steel is best for exhaust pipes and silencers. Though it is expensive and not available locally, alluminized steel has a longer usage: - almost three times that of metal sheets currently used in Kenya. But since alluminized steel is not specified in the standards it is hard to get an import licence for it. Importation of alluminized steel would mean that exhaust system manufacturers would spend 30% more than current costs of local metal sheets, however consumers will take much longer to replace their exhaust systems. The metal sheet currently used in exhaust system manufacturing is purchased from Brollo and/or Insteel who in turn import steel and add very little value. Kenya could save foreign exchange by importing alluminized steel. Infact Kenya can save as much as 57% of the current expenditure on steel for manufacturing exhaust systems (see table 5.1).

Table 5.1: Comparing Expenditures on Exhaust Systems Between Quantity Demanded of Metal Sheet Currently Used and Alluminized Steel

	Quantity Demanded	Unit Cost	Total Expenditure
Metal Sheets Currently Used	100[a]	1[a]	100
Alluminized Steel	33.3[b]	1.3[c]	43.3
Saving			56.7[d]

Note: (a) We can reduce the current demand for exhaust systems to a common base (100) with a unit cost of production of 1.

(b) Alluminized steel has a usage life of about 3 times that of metal sheets currently used. To satisfy the market for exhaust systems only a third of the currently demanded items will be needed at a particular point in time ($100x\frac{1}{3} = 33.3$).

(c) Alluminized steel is estimated to cost 30% more than the currently used metal sheets (1+0.3 = 1.3).

(d) By importing alluminized steel Kenya can save an amount equivalent to the difference between expenditures on currently used metal sheets and alluminized steel.

In order to protect consumers, improve quality of exhaust systems and to save foreign exchange, KBS should approve the use of alluminized steel instead of simply stating the thickness of metal sheets to be used.

- In leaf-spring manufacture, KBS standards advocate for the use of bushes without specifying the materials to be used for their manufacture. As a result both steel and brass bushes are used. This poses a question on the security of vehicle users. The steel bush is hard and takes longer to wear out, however it can crack the shaft thus disconnecting the spring from the body of the vehicle. Brass is soft and wears out but is unlikely to make the shaft crack. Steel bush should not be used because it can pose danger to users. In conjunction with the motor vehicle assembers, KBS should recommend the safest bush to be used. This should become the legal standard.

- One filter manufacturer sent samples of both oil and fuel filters to KBS. The samples were not tested because KBS allegedly didn't have the facilities or the personnel.

Lack of specific standards leadsto lack of trust in locally manufactured components by users. The component manufactures therefore have to send samples of their products to overseas vehicle assemblers for testing or manufacture under licence from a multinational corporation and hence exposing local manufacturers to discrimination. The government should therefore ensure that KBS standards state not only the dimensions of materials used but also their type. In addition,KBS should be encouraged to supervise the standards to ensure that local firms produce high quality products.

4. Rationalization of Models of locally assembled vehicles

Already it has been shown that many component models are manufactured in Kenya resulting from many vehicle models whose parts are not interchangeable. This is expensive for many jigs and dies have to be made. The options here are either to standardize the components or to rationalize the number of vehicle models. The former is a decision that must be taken by motor vehicle manufacturers not component producers. The only realistic option to Kenya is to limit the number of vehicle models. With few vehicle models component producers would increase their output per the accepted models thus reducing set-up and interchanging time. This will finally reduce the average production costs of components and will be carried over to the motor vehicle assembling and maintenance industries.

All interviewees concured that motor vehicle makes and models are too many. On the average two vehicle models and makes in each category seem to be ideal for Kenya. This is supported by assemblers who nearly always have to use different jigs for different vehicle models. The jigs are only economical if many vehicles are assembled on each. Rationalizing vehicle models would therefore not only reduce average production costs in motor vehicle ancilliary industry but also in motor vehicle assembly industry and to final users of vehicles.

5. Regulating Importation of Vehicles

Whereas local vehicle assemblers work on many models, all these are designed for Kenyan market. But for independent importers, uniqueness of a vehicle is a virtue. We thus end up with vehicles designed for North American, European, South American markets etc. For component manufacturers, this is a serious challenge because designs of certain components differ between markets even though the vehicle make is the same. Among the imported vehicles are the reconditioned ones with another unique problem in that some of their components are not similar to the original model. Different jigs and dies have to be made specifically for them.

The need to reduce the number of models on our roads is complex. It should not only discourage assembling and importation of many different models, but also importation of reconditioned vehicles within the range of the accepted models if their components' make up is different i.e. if such reconditioned vehicles were designed for markets different from ours.

6. Stimulating export promotion schemes

Though the present rate of export compensation can effectively stimulate exports of motor vehicle components, there is need to reduce the delay in rebate of sales taxes and the slow payment of the export compensation. This is because these delays offset the export compensation.

On the part of component manufacturers there is need to adopt more aggresive export marketing schemes. It is a pity that inspite of operating at below capacity some firms manufacturing components have not tried to market externally their products.

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APPENDIX I

QUESTINNAIRE:

(FOR COMPONENTS MANUFACTURERS)

DATE..................

Confidentiality requested? Yes/No.

SECTION I: IDENTIFICATION

1. Name of Company..
2. Location..
3. Address..
4. Name of Interviewee..
5. Position..
6. When did you start your operations in Kenya?......................
7. Which of the following components/parts do you manufacture and/or import (tick whichever appropriate).

   (i) Radiators (ii) Exhaust pipes and Silencers

   (iii) Batteries (iv) Leaf springs (v) filters

   (vi) Brakepads

   (ASK FOR A DETAILED LIST OF THE COMPONENT BY TYPE).

8. Is the firm a sole proprietorship? Yes/No................

   If no, can you give the details of ownership.

   Government...........%

   Local sharehoholders...%

   Foreign shareholders........%

10. Of Your total sales for the component(s) You Manufacture, what percentage goes to replacement market.

(a) (i) Name of Component -------- ------

(ii) Percentage of sales to replacement Market------------

(b) (i) Name of Component -------

(ii) Percentage of sales to replacement market----------

9. Can you name your local competitors..............................

....

SECTION II: UTILIZATION OF PROUCTION CAPACITY:

1. (a) For how many hours do you work per week?...........hours

   (b) How many hours per week do you allocate to production of the components/parts You stated in question 7.

COMPONENT/PART	HOURS PER WEEK
....	....
....	....
....	....
....	....

2. Do you operate shifts? Yes/No.

   If yes then complete the table below

WEEKDAYS.

	start (time)	Break (hrs)	End (Time)	overtime (hrs)	no of workers
Shift 1	-----	-----	-----	------	--------
Shift 2	------	-----	-----	------	--------
Shift 3	------	-----	-----	------	--------

SATURDAY

	Start (time)	Break (hrs)	End (Time)	overtime (hrs)	no of workers
Shift 1	------	------	-----	------	------
Shift 2	------	------	-----	------	------
Shift 3	------	------	-----	------	------

SUNDAY:

	Start (time)	Break (hrs)	End (time)	overtime	no of workers
Shift 1	-----	-----	-----	-------	-------
Shift 2	-----	-----	-----	-------	-------
Shift 3	-----	-----	-----	-------	-------

3. Supose much demand existed and import licenses for inputs were easy to obtain, how many shifts and days per week is a reasonable maximum your plant could run to produce the components/parts you stated in section I question 7.

COMPONENT/PART	MAXIMUM SHIFT	MAX. DAYS	MAX. hrs per day
-----------	-----------	---------	---------------
----------	-----------	---------	---------------

4. Why not more---

----

5. Can you give a breakdown of workers currently involved in production of Components in your factory per shift by completing the table below@overleaf

	MANAGERS	SUPERVISORS	TECHNICIANS	SKILLED LABOUR	UNSKILLED LABOUR	CASUALS
SHIFT I COMPONENT						
SHIFT 2 COMPONENT						
SHIFT 3 COMPONENT						

6. Assuming your current level of transport and Machinery equipment and building space, but allowing for some slight organizational or minor equipment changes, and assuming that sufficient order existed, how much additional work could you handle within your current hours and same machinery (50% would mean half again, 100% double the current level; 0% would mean no extra ability).

COMPONENT	% Increase with no additional workers	% increase with additional workers	no. of add nal worker achieve t
----------	----------	----------	---------
----------	----------	----------	---------
----------	----------	----------	---------
----------	----------	----------	---------

7. Are any of the following reasons a serious hinderance to your running a multishift operation if sufficient orders existed? Please rank them as follows:- very important(v), Important(i), somewhat important(s) and not important(n)

(a) difficulty in getting supervisory staff ---------

(b) payment of a premium to night workers ---------

(c) need to offer night transport ---------

(d) low labour productivity at night ---------

(e) many machine accidents at night ---------

(f) Other (specify) ----------------------------

SECTION III: REASONS FOR CAPACITY UNDER UTILIZATION

1. To what extent are the reasons given below important in explaining the current underutilization of plant and equipment in your firm? Please rank them as very Important(V), Important(I), somewhat Important (S), and not Important(N)

(a) difficulty in obtaining local raw materials -------

(b) plant break downs -------

(c) Shortange of manpower -------

Specify ------------------------------------

(d) Competition from Importers -----------

(e) Lack of adequate demand -----------

(f) poor attitude of assemblers -----------

Explain ---------------------------------

(g) problems of obtaining foreign exchange ----------

(h) high cost of inputs ----------

(i) too many vehicle makes and models -----------

(j) Improper planning and polices by government -----------

state clearly in what ways.---------------------------

(k) proudction Imbalances and bottlenecks between sections within the factory ----------

Explain--
----

2. Have you ever made presentations to the government to attempt to stop new projects in your industry because you believe that there is already too much excess capacity to produce the product which you can make?

Yes/No.----------

If Yes, can you state the product(s) and what happened

SECTION IV CAPACITY PRODUCTION

1. For how many weeks per year to do operate --------------------

2. Using the answer you gave in section I question 7, can you complete the table below to give your actual production over the last six years and the maximum quantity you could produce in a week without changing the level of equipment and machinery; if the plant were to run at a reasonable maximum (based in your answer(s) in sectionI question 3).

(a) Name of Component ------------------------------

YEAR	ACTUAL QUANTITY For the year	VALUE OF QUANTITY For the year	MAX. QUANTITY per week
1981	--------------	---------------	-----------
1982	-------------	----------------	-----------
1983	-------------	----------------	-----------
1984	-------------	----------------	-----------
1985	-------------	---------------	-----------
1986	-------------	---------------	-----------

(b) Name of Component-------------------------------------

YEAR	ACTUAL QUANTITY	VALUE OF QUANTITY	MAX. QUANTITY Per week
1981	-------------	---------------	------------
1982	-------------	---------------	-------------
1983	--------------	----------------	-------------
1984	---------------	---------------	-------------
1985	---------------	----------------	-------------
1986	----------------	----------------	--------------

(c) Name of Component ---------------

YEAR	ACTUAL QUANTITY	VALUE OF QUANTITY	MAX. QUANTITY WEEK
1981	--------------	---------------	------------
1982	--------------	---------------	------------
1983	---------------	---------------	------------
1984	---------------	---------------	------------
1985	---------------	---------------	------------
1986	---------------	---------------	------------

SECTION V PROTECTION: AGAINST IMPORTS

(1) which raw material(s) inputs do you need in your in your manufacturing process for the listed components(s)?. state whether Imported (I) or locally available and used (L) please can you kindly estimate the cost of the raw materials/units as at the factory ie Cif if Imports.

(a) Name of Component-------------------

ISIC Code	Raw Material	Cif (Mombasa) price/Unit	Duty %	Sales tax %	Domesti includi Traspor
------	-----------	-----------	----	-------	-------
------	-----------	-----------	----	-------	-------
------	----------	-----------	----	--------	-------
------	-----------	-----------	-----	-------	-------
------	----------	-----------	-----	-------	-------
------	----------	-----------	-----	-------	-------

(b) Name of Component:

ISIC	Raw Material	CIF(Mombasa) Price/Unit	duty %	sales tax %	Domestic pric Incl. transpo if locally ma
-----	----------	---------	-----	-------	-------------
-----	----------	---------	-----	-------	-------------
-----	----------	---------	-----	-------	-------------
-----	----------	---------	-----	-------	-------------
-----	----------	---------	-----	-------	-------------
-----	---------	---------	-----	-------	-------------

2. Are some of the currently imported inputs locally available? No/Yes Yes/No

   If yes which are these --

   ----

3. Of the locally made inputs you buy, is there any whose Importation

   is banned by the government? Yes/No

   If yes list them

INPUT	ISIC CODE
----------	---------------
----------	----------------
----------	----------------
-----------	----------------

4. Of your ex-factory price for each component/part what percentage is accounted for by direct Materials, direct labour and factory overhead? Please complete the table below.

Name of Component......................

(i) DIRECT MATERIAL — % of Ex-Factory price

locally Made raw materials (Inputs)	
Imported raw material (% average	....
duty?........)	....

(ii) DIRECT LABOUR

Total wage bill of direct labour	% of Ex-factory price
	....

(iii) FACTORY OVERHEAD — % of Ex-factory price

Administration	....
Depreciation	....
Interest	....
Others	....
Profit	....

5. Can you kindly complete the following table to give the cost structure of the component you manufacture. (All cost items should be given as percetage of sales). Also state the percentage increase in each cost item if output were either doubled or increased by 50% (state which ever applicable).

ITEM	COST AT CURRENT VOLUME OF OUTPUT	% INCREASE IN COST IF OUTPUT WERE DOUBLED/ INCREASED BY 50%	TOTAL INCREASE IN COSTS
RAW MATERIAL			
WAGES			
MACHINERY AND REPAIRS			
POWER AND WATER			
DEPRECIATION			
INTEREST			
SALARIES			
OTHERS			
....			
....			
....			
....			
TOTAL			
PROFIT			
TURNOVER			

APPENDIX 2

QUESTIONNAIRE

(FOR MOTOR VEHICLE ASSEMBLERS ~~ONLY~~
AND CKD KIT IMPORTERS)

DATE.....................

Confidentiality requested? YES/NO

1. Name of Company....................................
2. Address..
   ....
3. Name of interviewee................................
4. Position of interviewee...............................
5. When did you start business in Kenya.................
6. Can you complete the table below on the number of vehicles you have been assembling during the last four years.

	1983	1984	1985	1986
Motor cars	.....	.....	.....	......
Pick-ups & Pannel vans	....	......	....	....
Lorries, trucks	....	......	....	....
Buses & Mini-buses	....	....	....	....

7. Please kindly give a list (or catalogue) of different vehicle makes and models you assembled in your first year of operation and those you currently assemble. Please also include the client for whom you assemble.

8. Which of the following components do you get from domestic suppliers? (Tick which ever appropriate)

Radiator	-----------
Leaf spring	-----------
Battery	-----------
Exhaust pipe & silencer	-----------
Break pad	-----------
Filter	-----------

9. (a). In some cases imported components are prefered even though such components can be manufactured locally.

Do you agree? YES/NO

(b) If yes in 9a. some of the factors considered before chosing to import even though local components are available include:- quality, prices, supply of local components, prices and low deletion allowances among others. Please complete the table below expressing your choice of the components given below.

Use VISN (V - Very Important, I -Important, S -Somewhat Important
N - Not Important).

REASON	RADIATORS	LEAF SPR-INGS	BATTERIES	EXHAUST PIPES & SILENCERS	BREAK PAD	FIL. Oil	FIL AI
Quality							
Supply reliability							
Price							
Low deletion allowance							
Other Reasons							

----------------------							

10. Are you searching to increase the number of local components?

YES/NO

If YES can you give a detailed list of the components you are seriously considering and explain briefly why---------------------------------

----

----

11. (a) Who decides on the acceptability of a local component?

(b) What criteria are generally used to determine acceptability of a local component?----------------------------------

----

----

12. Are there any limitations restricting your choice of source of Input? YES/NO

If Yes, explain briefly-------------------------------------

----

13 (a) Are there any cases where you felt that components satisfying KBS quality standards do not meet your firm's standards? YES/NO

Explain and give example-----------------------------------

(b) If Yes in 13a, are you bound to accept KBS standards? YES/NO

14. Has there been any negotiation between your firm and local producers of components about the level of CKD deletion allowances? YES/NO.

If yes what has been their major complaint about CKD deletion allowance (eg. too high, too low, low, about right) compared to their production costs---------------------------
----

(b) According to your own evaluation of their complaints, is it reasonable? YES/NO

Explain---

----

15. Has there been any negotiation between your firm and local producers of the components about the standards? YES/NO.

If yes can you explain your complaint or recommedation with specific reference to components listed in question 8.
(use low, high, about right, too low)

Radiators ------------------------

Leaf springs ------------------------

Batteries ------------------------

Exhaust pipe & Silencer ------------------------

Filters (Oil) ------------------------

Filters (air) ------------------------

Break pad. ------------------------

What was the component Manufacturers response?

UNIVERSITY OF NAIROBI

ECONOMICS DEPARTMENT

Ref:
Telegrams: "Varsity" Nairobi
Telephone: Nairobi 334244

P.O. Box 3019
NAIROBI.
Kenya

APPENDIX 3

General Manager

Dear Sir,

RE: RESEARCH VISIT TO YOUR FIRM

The Masters Degree programme in the Economics Department assigns post-graduate students to research on topics of importance to national development for their M.A. thesis. By giving them such assignments, the department tries to instil in them an appreciation of the importance getting out to gain a concrete understanding of the needs and difficulties experienced by business. Since upon completion of their degree, most of these students later work for the government, this research can provide valuable experience and set a good pattern for their future responsibilities. Moreover, the M.A. theses on industry are quite thorough and the government has often found them to provide very useful background material for setting government policy.

Currently, Obere Almadi is working on his thesis on the vehicle ancillary industries. He is working under my close supervision and I fully expect him to produce a thorough and valua study that will be made available to various government departments in order to encourage policy changes to help stimulate these industries.

Mr. Obere would like to visit your firm on ------------------- at ---------- if possible. If that day is not convenient to you, please name any other in the nearest future. Your co-operation and assistance in this regard will be greatly appreciated.

Thank you.

Yours faithfully,

DR. PETER COUGHLIN
SENIOR LECURER & COORDINATOR
INDUSTRIAL RESEARCH PROJECT

APPENDIX 4

MAKES AND MODELS OF VEHICLES ASSEMBLED IN KENYA AS PER FEBRUARY 1987

(SUMMARY OF NUMBERS)

ASSEMBLER	MAKES	MODELS
GENERAL MOTORS	2	11
LEYLAND	10	35
FIAT	1	4
ASSOCIATED VEHICLE ASSEMBLERS	13	38
	26	88

Source: Own interviews

APPENDIX 5

MAKES AND MODELS OF VEHICLES ASSEMBLED IN KENYA AS PER FEBRUARY 1987

GENERAL MOTORS:

BEDFORD

(a) CJP TRUCT

ISUZU

(a) KB26 Pick-up (Petrol)

(b) KB26 Pick-up (Diesel

(c) Tropper Passenger vehicle

(d) NKR Truck

(e) NKR Mini Bus

(f) TXD 55 Truck

(g) TXD 45 Truck

(h) Foward Truck

(i) Uhuru Passenger Vehicle

(j) DQR Bus

ASSOCIATED VEHICLE ASSEMBLERS

DAF

(a) Bus

DAIHATSU

(a) Rocky Passenger vehicle

(b) Charade Passenger vehicle

MITSUBISHI

(a) 4 x 2 Truck

(b) 6 x 2 Truck
(c) 6 x 4 Truck

ERF

(a) 4 x 2 Truck
(b) 6 x 2 Truck
(c) 6 x 4 Truck

ERF

(a) Bus

HONDA

(a) Shuttle Passenger Vehicle

LANCER

(a) L200 Pick-up (Petrol)
(b) L200 Pick-up (Diesel)
(c) Mirage Passenger Vehicle

MERCEDES BENZ

(a) 4 x 2 Truck
(b) 6 x 2 Truck
(c) 6 x 4 Truck
(d) Bus
(e) Army Truck

NISSAN

(a) Pick-up (petrol) 1 ton
(b) Pick-up (diesel) 1 ton
(c) Pick-up (petrol) ½ ton
(d) Cabster Bus
(e) Cabster Truck
(f) Mini Bus (petrol)
(g) Mini Bus (diesel)
(h) Sunny (Saloon) Passenger Vehicle
(i) Sunny (Station Wagon) Passenger-vehicle

PEUGEOT

(a) 504 Pick-up
(b) 504 Saloon
(c) 504 Station Wagon
(d) 404 Pick-up

LEYLAND

LAND ROVER

(a) L/R 110 Station Wagon Petrol 2¼L K5013
(b) L/R 110 Pick-up Petrol 2¼L K5012
(c) L/R 110 Pick-up Petrol 2.5L K5083
(d) L/R 110 Station Wagon Petrol 2.5L K5084
(e) L/R 110 Hard Top Petrol 2.5 K5083D
(f) L/R 110 St. Wagon Diesel. 2.5L K2015
(g) L/R 110 V.8 Pick-up Chassis Cab K5072

PAJERO

Station Wagon - L047GVNJRB
Mini Van - L047GWNJRB

MITSUBISHI L300

Mini Bus - L06SPWQNBR
Mini Van L06SPVQNBR

SUZUKI

SJ-410WRJFD
SJ-413VTXR
SJ-410JA

NISSAN TRUCKS

(a) UG 780 7 - Ton
(b) DU 780 7 - Ton Tipper
(c) TD10 Long & Short
(d) CPB12LHR
(e) CWC HTN

NISSAN BUSES

CB20NXND - Short
CB20RXN - Long
CB30NXN - Short
CB30RXN - Long
RB30NXN -

MAZDA T4100 - WT63

KBS Victory II

E A R S Victory II

Super Eland

MAZDA

(a) 323 BTISYL 1.5L Saloon

(b) B1600 UT45 Pick-up

MITSUBISHI CANTER

FE301BAERB11	- 3½ Ton	Short Chassis Std. Cabin
FE434EZRBII	- 4 Ton	Long Chassis Wide Cab
FE434EZRBI2	- 4 Ton	Long Chassis Scuttle
FE444EZRBII	- 6 Ton	Long Chassis Wide Cabin With Ex. Brake

RANGE ROVER 4 Door KS910

V.W. Minibus Type 256

FIAT

(a) Uno Passenger Vehicle

(b) 619 NIP-TIP Truck

(c) 682 N3 Truck

(d) 300 PC-PT (6 x 4) Truck

APPENDIX 6

FIRMS VISITED

1. KENYA FILTERS LIMITED
P.O. BOX 11640
NAIROBI

2. MIDAS ENTERPRISE
P.O. BOX 18895
NAIROBI

3. AFRICAN RADIATORS
P.O. BOX 40006
NAIROBI

4. DYNAMICS INDUSTRIES LIMITED
P.O. BOX 18624
NAIROBI

5. E. A. MOTOR INDUSTRIES
P.O. BOX 81004
MOMBASA

6. AUTO PERFORMANCE
P.O. BOX 52797
NAIROBI

7. R. B. SHAW (AFRICA) LTD
P.O. BOX 43617
NAIROBI

8. VARSHANI BRAKE LININGS LTD
P.O. BOX 69737
NAIROBI

9. ASSOCIATED BATTERY MANUFACTURERS
P.O. BOX 48917
NAIROBI

10. COOPER MOTOR CORPORATION
P.O. BOX 30135
NAIROBI

11. THOMAS WHITE BATTERIES LTD
P.O. BOX 42707
NAIROBI

12. AUTO FILTERS
P.O. BOX 43617
NAIROBI

13. AUTOSPRINGS MANUFACTURERS LTD
P.O. BOX 53677
NAIROBI

14. AUTOANCILLIARIES LTD
P.O. BOX 58855
NAIROBI

15. LEYLAND (K) LTD
P.O. BOX 1436
THIKA

16. ASSOCIATED VEHICLE ASSEMBLERS
P.O. BOX 86344
MOMBASA

17. GENERAL MOTORS KENYA LTD
P.O. BOX 30527
NAIROBI