ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF ECONOMICS

MEASURING ECONOMIC EFFICIENCY: A CASE STUDY OF STATE OWNED TEXTILE INDUSTRIES IN ETHIOPIA

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN ECONOMIC DEVELOPMENT AND PLANNING

BY

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SEPTEMBER 1987

ADDIS ABABA

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

The undersigned certify that they have read and recommend to the School of Graduate studies for acceptance, a thesis entitle "Measuring Economic Efficiency: A case Study of State Owned Textile Industries in Ethiopia" submitted by Gezahegne Mitikie in partial fulfilment of the requirements for the degree of Master of Science.

APPROVAL BY BOARD OF EXAMINERS

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ACKNOWLEDGEMENTS

It is a pleasure to express my heartfelt appreciation to all those who have contributed towards the completion of this thesis.

My deepest and foremost gratitude goes to Dr. Befekadu Degefe, under whose supervision the thesis has been completed. His advise, encouragement, support and kind help for the whole period of the study has immensely contributed to the completion and success of the thesis. I am also heavily indebted to Mr. Michael Payson, the Resident Representative of the World Bank to the Field Office in Addis Ababa, who not only encouraged me, but also provided material support during the preparation of this thesis. Thanks are also due to Dr. Asrat Teffera for his comments on various stages of the paper and Ato Shiferaw Jamo who has assisted me in editing the manuscript. My sincere appreciation also goes to all experts of the Ministry of Industry, the National Textile corporation and the Development Projects Study Agency who were helpful in providing me with information.

Finally I am very greateful to W/o Asmaru Adane who spent her precious time in typing this thesis.

ABSTRACT

An important factor that would influence the success or failu of an industrial concern is the degree of efficiency in the utilization of resources under its command. In Ethiopia efficiency is a major problem. There are some evidences to support the contention that resources are being utilized inefficiently.

By employing the Deomestic Resource Cost (DRC) methodology in general equilibrium setting, this study attempts to empirically establish the incidence of protection and the magnitude of efficiency in the State owned textile industry at a point in time. The major findings are as follows: (a) The system of protection provides a uniform nominal protection to all firms (b) The effective protection is high and differs substantially among firms (c) The domestic resource cost is high and differs substantially among firms, indicating inefficiency (d) Firms with high domestic resource cost are accorded high protection while firms with low domestic resource cost are offered low protection. This indicates that the Ethiopian system of protection encouraged and supported inefficient firms (e) Wide differences exist between economic and private profitability among firms, indicating the presence of price distortions both in the product and factor markets. The quantitative estimates further indicate that in a number of cases the effect of government policy was not consistent with objective of economic efficiency.

To enhance economic efficiency in the State owned textile sector, substantial restructuring and policy reform is required. In respect to this, the study identified specific areas that deserve the attention of policy makers and recommends the measures to be taken.

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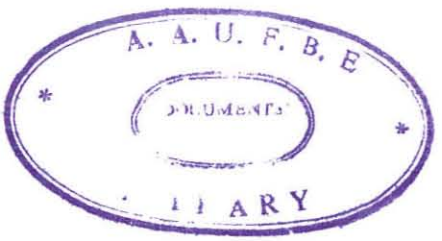

CHAPTER ONE

1.0 INTRODUCTION

1.1. Statement of the Problem and Justification of the Study

One of the basic economic problems that fact the less developed countries (LDCs) of which Ethiopia is one, is the backwardness of their economies on the one hand and the scarcity of resources to match their desire and drive on the other. Usually and on legitimate grounds their desire requires them to use their scarce resources in building their economies. The alternative to supplying themselves from external sources results in inefficient utilization of available resources such as labour, land and capital. In these countries the standard of living is low so that the vast majority of the people live in abject poverty. The traditional sector (agriculture) is not dynamic and capable of generating economic surplus. Beginning in late fifties and until the early seventies, the LDCs opted for rapid industrialisation as a means of improving the welfare of their peoples and dynamizing the economy. "Growth of output, employment and foreign exchange saving or earning through efficient use of scarce resources have been the major economic objectives of industrial development".[1]

Consequently, the industrial sector enjoyed advantages at the cost of other sectors. Agriculture suffered as a result of the neglect of the policy makers.

Agriculture was regarded as a lagging sector with the policy implications of continued and heavy dependence on it are that of further weakening and impoverishing not only of the present but

also of future generations[2]. Conversely, there was a widely held belief that industrialization offers an easy and quick way to pull the countries out of their economic lethargy by providing gainful employment to idle labour in agriculture, with modern tools, implements and parts which can help raise income in this sector.

This belief led to an intensive industrialization drive in most developing countries. With respect to the type of industries established, the strategy opted for was import substituting (IS) to take advantage of the already developed demand and at the same time to ease the pressure on the balance of payments. In addition to such an economic logic, the IS strategy enjoyed other justifications, of which the political aspect was one. "In the early LDSs litrature, the import substituting industrialisation was seen as a prerequisite for halting the transfer of surplus from periphery to the centre[3].

This strategy failed not only to diminish the degree of dependence of LDCs on the developed countries (Dcs) but it also in providing the inertia by which the economy was to pull itself out of its lethargy. These countries failed to create the necessary linkage between the industries so established and the rest of the economy and especially agriculture.

As a result and for all practical purposes the industrial factor remained an island with its umbilical cord still attached to DCs which continued to supply it with the necessary raw materials and spare parts as well as capital goods.

The second problem is one of efficiency in resource use, with or without the creation of the linkage between the industrial sector

and the national economy. An important factor that would influence the success or failure of an industrial concern is the degree of efficiency in the utilization of the resources under its command.

This research is interested in the latter problem as engendered by industrialisation. The focus of our attention and the issue to be examined in sufficient detail pivots on the question of how efficiently the industrial sector utilizes resources. It involves comparing cost of production to import cost of the same product which is an opportunity cost to the country.

The study can be justified on two grounds. First efficiency is an important problem in Ethiopia today. Although not much empirically supported conclusion exists, there are some evidences to support the contention that resources are being utilized inefficiently.

The second justification follows from the one given above. In the first instance it would seek to establish empirically the existence and if so the extent of inefficiency with the final objective of providing policy recommendations along with measures to be taken.

1.2 Objectives of the Study

In specifics the research attempts to:

1. Investigate the policies of the Ethiopian Government vis-a-vis efficiency objectives which in this study is the basic objective among the multiple objectives of the Government;
2. Analyze the efficiency of the textile industry;
3. Assess and measure intra-firm efficiency of 15 units

incorporated under the National Textile Corporation;

4. Indentify what textile products Ethiopia can manufacture efficiently or which (if any) textile product(s) can save or earn the country foreign exchange;
5. Identify the likely problems of the firms and analyze the impacts on the firms of current government policies.
6. Discuss the consequences of the results obtained for future industrialisation policy formulation.

1.3 Significance of the Study

In Ethiopia efficiency is a major problem. However, studies on efficiency are very scanty. Thus, the proposed study would add to the existing knowledge and hence is of critical importance. Measuring the economic efficiency of an industrial undertaking would have a significant implication for the development goals of the country. For instance, if inefficiency exists in a particular industrial sector, it might results in the misallocation of resources. Thus, without assessing the economic efficiency of a given industry one cannot adequately speak of the benefits or costs to the country.

In other words, efficiency analysis would minimize the national losses that would otherwise result from running inefficient industries or from inappropriate policy. It is within this framework that the study is conceived and would be important to the country, to the extent that it provides the Government or the relevant authority with an analysis of the strength and weaknesses of a given industrial sector at present and recommends the formulation of policies that might be more effective in enhancing the industrialisation drive.

1.4 Choice of Industry

For the purpose of this study we choose the textile industry because it is one of the leading and well developed sub-sectors in Ethiopia. In 1983/84 the contribution of the sub-sector in terms of the gross value of production, value added and employment were 23.4 percent, 40 percent and 43 percent of the total industrial sector respectively.

Moreover, the textile sector has strong linkage effects with the rest of the economy and a relative degree of freedom over exogenous market disturbance.

1.5 Choice of the Year 1980

The study is based on single period analysis. For this purpose the year 1980 has been selected as the best year that would give us comparable information with relative stability.

1980 was the year when the inflationary recession of the 1970s lost momentum and the world economy went back to a measure of relative stability. Internationally as well as in Ethiopia economic activity has by 1980 completed the adjustment process to the volatile situation of the earlier years such as the two oil price shocks of 1974 and 1979, high interest rate, high inflation and above normal unemployment rate, as well as the instability engendered by the revolutionary upheavals and external aggression of the previous decade.

Ethiopia and other countries including international institutions use 1980 prices as the basis for calculating economic values at constant prices. Hence, in this study all costs and benefits have been calculated on the basis of the 1980 data.

1.6 Scope and Limitation of the Study

Measuring the economic performance of each manufacturing activity in Ethiopia could be very important for formulating not only detailed and specific policies but also for a comprehensive industrial policy in the long-run. But constraints in time, shortage of financial resources as well as data have limited the author from venturing in to such a comprehensive exercise. The only alternative is to consider a case study. For this purpose, the textile industry has been selected. However, the study does not intend to cover the textile industry as a whole, but is limited to the state owned textile industries which in 1980, accounted for 90 percent of the value added, 98 percent of the total employment and 40 percent of the number of establishments of the textile sector.

1.7 Methodology

The general formulation of the methodology is based on the concept of Domestic Resources Cost (DRC). This concept relates to measuring the opportunity cost in terms of total demestic resources of producing or saving a net marginal unit of foreign exchange; the basic analytical framework will be given in chapter 4.

1.8 The Data

In order to calculate the DRC and other parameters it is necessary to collect data on individual firms. Information on revenue, costs of both traded and non-traded inputs, labour and capital were collected from 15 firms. The data were obtained by means of a detailed questionnaire and interviews of factory managers and accountants.

The questionnaires that were distributed to firms solicited information on sales, purchases of input materials and services, labour and capital costs, capacity utilization, taxes, etc.

Quantity and value data were gathered on a product-by-product basis. The costs of material inputs were also gathered on a product-by-product basis with a break down between directly imported inputs and purchases made with local currency.

The number of employees on the basis of skill, wages and salaries were obtained. Capital asset data were collected to represant the value of productive capital used up by the firm.

The data were cross checked with data available at the Corporation to ensure completeness and accuracy. Some firms provided copies of their financial accounts thus making it possible for further cross checking and a more thorough understanding of the firm's operations. In an initial meeting the purpose of the study was explained to the managers and qualitative data including the effects of government policy involving foreign exchange, labour, price controls, etc. were discussed. In addition, the questionnaire, the data needed and the procedure for completion were explained, often with the accountants and financial managers who filled out the questionnaire. Factory tours at several firms enabled us to familiarize ourselves with and to gain a better understanding of plants' operations.

FOOT-NOTES

1. Ramesh Adhikar: (1986),"Industrial Projects and Economic Policies: Future Lessons from Past Projects" Project Appraisal: Ways Means and Experience, Vol. 1, No. 3, P. 179.

2. UN (1982),A Programme for the Industrial Development Decade for Africa, (New York, UN Publication), p. 1.

3. Hubert Schmiz (1984),"Industrialization Strategies for Less Developed Countries: Some Lesson of Historical Experience", The Journal of Development Studies, Vol.21

CHAPTER TWO

2.0. THE TEXTILE SUB-SECTOR IN ETHIOPIA: AN OVERVIEW

2.1. Evolution

No comprehensive appraisal of the textile sub-sector in Ethiopia can be made without considering the historical development of the industry in the context of the general development of the industrial sector.

Ethiopia has had an old tradition of handicrafts, artisanal and other types of small scale industries. These have mainly been concerned with food processing such as flour milling, production of cooking oil, leather tanning, fashioning of simple tools and fixtures. Production was, however, very limited since the market and the division of labour was not developed.

The history of modern industrialization on any significant scale did not begin until the beginning of the 20th Century.

The gradual emergence of urban centres, the development of transport and communications, the expansion of government administration and the increasing contact made with the rest of the world and the resultant exposure of the country to external ways of life together with the acquired tastes of members of the ruling class led to an increasing demand for imported commodities. These boosted the domestic market for industrial products providing the basis for modern industrialization, particularly after World War II.

These developments led to an unfavourable trend in the 1950s. The annual export earnings were falling while imports increased at a rapid rate resulting in deteriorations in the balance of trade.

In order to reverse this situation and thereby overcome the foreign exchange problem by taking advantage of the already developed demand and for halting the transfer of surplus from the country, the substitution of imports by establishing and expanding manufacturing activities in the country was perceived as the ultimate remedy. Thus, the import substitution (IS) strategy was adopted and became the dominant method for mobilizing national initiatives. The translation of this strategy into practice, however, was found to be unsatisfactory for a poor country like Ethiopia. Skill and means were limited and the implementation of the strategy required external investment.

Nevertheless, the evolution of a modern textile industry began well before the imprt substitution strategy was conceptualized. The first textile factory was established in 1939 at Dire Dawa. This was the time when the country was under Italian occupation. After the Italian force of occupation was driven out, the factory was reorganized as a share company (Ethiopian Cotton Share Company) in 1942. As a result, the ownership and management of the company passed into the hands of the British and Ethiopians.

The evolution of the other textile factories does not differ much from that of the Dire Dawa textile factory. Most of these factories initially depended on private capital for their establishment.

The possible exceptions were the Ethiopian Silk and Thread Factory, the Bahir Dar Textile Mill and the Debre Berhan Wool Factory which were established without the invlovement of foreign capital.

In the post-war period foreign private capital in search of cheap labour, raw materials and market flowed to LDCs. Ethiopia, being

one of the LDCs, has had an ideal condition in meeting the intended objectives of foreign capital. Consequently, huge amounts of foreign capital were available to the Ethiopian textile sector mainly from Italy, Great Britain, India, the Lebanon, the Federal Republic of Germany, Japan, Israel, Yemen, Egypt, Switzerland, the USA and Luxmburg. These countries particpated directly or indirectly in the formation of a modern textile industry in Ethiopia. This is evidenced by the fact that by 1975 about 65 percent of the capital was held by foreigners in the form of share capital leaving only 35 percent to nationals.[1]

Before we delve into the appraisal of the textile sub-sector, it is fair to consider the general policy environment which is presented succinctly in the following section.

2.2. The Policy Environment

2.2.1 Economic Policy

Economic policy in the sense of designating goals and defining the general environment for their achievement is a common characteristic of modern governments. The broad aims and objectives of economic policy can be couched in terms of high economic growth, maintaining stable prices and a healthy balance of payments, employment generation, balanced regional development, equitable distribution of income with the ultimate aim of improving the living standard of the people.

Ethiopia under the regime of Haile Selassie had a broadly formulated policy. The means for its achievment was the market and the role of the Government was to create a conducive environment by removing bottlenecks.

The Government focused on providing trained manpower, better nutrition, health and communications[2] as well as social overhead capital for the private sector while, at the same time, participating in the establishment and management of directly productive activities due either to the size of the capital required and/or where private sector was constrained. In this involvement the Government usually sought the partnership of domestic and foreign capital.

But the major impetus of the Government of the day, albeit its limited participation, was to create an environment that was conducive for the development entrepreneurship. This was usually effected through monetary and fiscal instruments designed to ease domestic pressures and offering protection from foreign competition. Its commercial policy was a derivative of this approach and relied heavily on instruments such as foreign exchange control, import licensing, tariff and other non-tariff restrictions.

With respect to monetary policy, low interest rates, selective credit controls which were highly skewed in favour of productive activities and the development of the necessary institutions such as the Agricultural Development Bank, the Investment Corporation, the Commercial Bank, etc. were pursued,

There was also a very liberal currency transfer policy for attracting foreign capital. In this regard, it was stated in the monetary policy of the country that, upon presentation of the necessary documents, foreign companies could remit dividends on their invested and reinvested capital in any currency they desired.

The revolution of 1974, while adhering to the basic objectives of the previous Government of growth, employment, stable prices, regional development with the ultimate goal of improving living standards, altered the priorities and especially the approaches for attainment of these objectives.

After ousting the Haile Selassie regime in February, 1974, the new Government, i.e. the Provisional Military Administrative Council (PMAC) sought to transform the Ethiopian economy by instituting a socialist system. Consequently, in December, 1974, the PMAC declared socialism as the guiding principle and ideology of the state.

Since then the Government has intervend and directly participated in all spheres of economic activity. Private sector participation is limited to small scale activities in agriculture, industry and services under very close and regorous government control and direction. Foreign participation is foreseen but in activities that are selected by the state, the condition of which is to be negotiated on a case-by-case basis. In this respect, the Government has delineated areas in which owners of capital, both public and private, can participate as follows:[3]

Activities Exclusively Reserved for the State

1. Exploitation of precious metals and radio-active materials;
2. Large-scale salt minning;
3. Basic industries such as iron and steel, ship building, cement;
4. Petroleum refining and natural gas;
5. Textile industry;
6. Leather and leather products manufacturing;

7. Large-scale rubber manufacturing and fertilizer industry;
8. Drugs and medicines;
9. Tabacco;
10. Glass and bottle manufacturing;
11. Large-scale printing and publishing;
12 Electricity, gas and water;
13. Railway, air and sea transport;
14. Radio, TV, posts and telecommunications.

Areas Where the State and Foreign Capital (Public and Private) Could Jointly Operate

1. Exploration and exploitation of carbons and hydrocarbons;
2. Mining of ferrous and non-ferrous metals;
3. Mining of chemical and fertilizer materals;
4. Processing, canning and preserving of meat;
5. Paper and pulp industries;
6. Manufacturing of plastic and other materials;
7. Large-scale construction works;
8. Tourism.

Activities Which are Left to the Private Sector

1. Food processing, canning and marketing;
2. Quarrying;
3. Dairy;
4. Small-scale grain milling and pressing of oil seeds;
5. Bakery;
6. Small-scale manufacture of wood and wood products;
7. Fabricated metal products;
8. Small-scale weaving, knitting, spinning, sewing and tailoring;

9. Cottage industries;
10. Repairs and maintenance;
11. Small-scale construction work;
12. Export and import trade;
13. Wholesale and retail trade;
14. Surface transport other than railways;
15. Small-scale inland water transport;
16. Entertainment services;
17. Other activities including hotels, bars, restaurants, tea shops, groceries;
18. Others not elsewhere classified.

Consistent with the objective of Ethiopian socialism the PMAC announced the nationalization of 72 factories owned by the private sector in February 1975. To manage the nationalized factories the Government created the Ministry of National Resource Development (MNDR). The Ministry was given powers to encourage, promote and establish public enterprises and to direct and supervise those already in operation.

Following the reorganization of the government in 1977[4] the MNDR was dissolved and the public enterprises under its management were placed under different ministries.

This led to the creating of the Ministry of Industry to administer the industrial sector. The Ministry of Industry in turn reorganized industries into corporations.

Moreover, in 1981/82 the Government introduced for the first time the Ten-Year Perspective Plan. The plan laid down sector specific objectives and industry is regarded by the Plan as the driving force for achieving rapid economic development in Ethiopia. The

specific objectives in the order of priority given are:[5]

a. To satisfy the demand for basic commodities;

b. To strengthen the handicraft sector;

c. To strengthen linkage with the agricultural sector;

d. To provide adequate quantities of construction materials;

e. To lay the groundwork for the establishment of heavy industry;

f. To improve the balance of payments by earning and saving foreign exchange;

g. To create employment opportunities; and

h. To contribute towards balanced regional development.

2.2.2. Investment Policy

The development of the textile sub-sector in Ethiopia must specifically be assessed in the context of the successive investment policies through which industry has passed. The pressing need to change a backward, subsistence economy of the post war period into a dynamic monetized economy forced the Government of the day to pursue an inward looking strategy.

To this end a legislation in the form of a Notice that extended benefits such as tax relief, duty free importation of machinery as well as foreign exchange remittances was promulgated in 1950 for encouraging foreign capital investment. However, this legislation did not extend the opportunity to Ethiopian investors.

The second investment proclamation was Proclamation No. 145 of 1954. This proclamation exempted investors from all kinds of taxes and duties on imported agricultural and industrial equipment that would be used directly in the exploitation and development of agricultural and industrial resources.

A comprehensive investment policy, however, was not formulated until the first five year plan (1957-1962). With the emergence of the plan priorities were set and areas of investment were clearly disignated.

The third investment legislation was the income tax proclamation (proclamation No. 173 of 1961) which exempted enterprises engaged in industry, transport and mining activities from income tax as follows:

a) For a period of upto five years if the investment was Br. 200,000 or more, and

b) For three years if Br. 500,000 was invested in an expansion of an already existing enterprise, provided the extention was operated as a separate technical unit with separate accounts.

Later, in 1966, the decree providing for the encouragement of capital investment in Ethiopia was promulgated. This proclamation in effect not only consolidated the investment policies contained in the previous legislations but it also broadened their scope. Unlike the 1950 Notice, this proclamation extended benefits to Ethiopian investors.

The incentives offered to manufacturing industry as outlined in this proclamation are summarized below.

i) Income tax relief: A newly established enterprise with an investment of at least Br. 200,000 is exempted from payment of income tax for five years. The privilege was also extended to enterprises that expand their operations if the investment in extension was not less than Br.200,000 and provided the extension operated as a separate technical

unit with its own set of accounts. In such cases the privilege was extended for a period of three years only.

ii) Import duty relief: (a) Agricultural and industrial machines, implements, appliances or parts imported for exclusive use in agriculture and industrial activities were exempted from the payment of all taxes and duties levied on imports;
(b) Structural and building materials imported for the construction of industrial building could be exempted from the payment of import duties and all other taxes. However, in both cases exemption is possible only on those goods that are not produced domestically;

iii) Export duty relief: Manufacured finished goods destined for external market could be exempted from export duties and transaction taxes on exports, provided that such an exemption was necessary to keep the price of the goods within a competitive range in the world market;

iv) Remittance of foreign exchange: The National Bank of Ethiopia makes available foreign exchange for:

a. remittance of profits of foreign investors to their countries of origin;
b. repatriation of the net proceeds of a foreign investor upon partial or total sale of Liquidation of his investment.
c. payment of interest and repayment of foreign loans contracted by eneterprises in accordance with the provisions of the Investment Proclamation;
d. remittance of savings of foreign personnel in enterprises to their countries of origin;

e. the purchase of replacements and spare parts and other materials and goods required in connection with the operation of the enterprises.

v) Acquisition of immovables: Foreign investors were allowed to purchase land for the purpose of establishing industrial enterprises.

vi) Dividends: Under the income tax law dividends were not subject to income tax.

vii) Protection: Protection was guaranteed to industrial enterprises, upon satisfaction that such protection was necessary. This include the levying of high tariffs as well as the banning of imports of those commodities that might adversly affect domestically produced goods.

The need for foreign investment was also recognized by the new Government right from the take-over of power in 1974. As has been pointed out earlier, special activities were delineated where foreign capital can jointly participate with Ethiopian Government capital.

The activities allowed for such joint venture are enumerated under Art. 3 of Proc. No. 26/75 and in the case of mining a further elaboration was made by Art. 3 of Proc. No. 39/75.

In addition, in 1983, the Government promulgated a new investment policy in the form of joint ventures (Proc. No. 235/83) which basically iterated the necessity for the participation of foreign capital with Ethiopian public capital in joint ventures and allowed joint investment in all activities save precious metals, public utilities such as electricity, telecommunications and water, banking, insurance, transport and domestic trade.

One of the prominent features of this joint venture code is that unlike some of the previous investment laws it excludes private domestic capital.

2.2.3 Commercial, Employment and Wage Policy

The policy instruments discussed in the preceding section were designed to first of all encourage entrepreneurs and/or owners of investible resources to invest their capital in productive activities that would contribute to and enhance, directly or indirectly, the achievements of the goals of the Government.

The other feature of the country's industrial policy can also be seen by investigating the incentive schemes to the industrial sector in the form of protection, i.e. tariffs, import licensing, exchange control, quota, etc.

The basic assumption behind offering a substantial protection to the manufacturing sector was that the infant industries would grow into adulthood through increased efficiency resulting from the acquisition of technical know-how, learning by doing, training and other schemes through which labour productivity would increase. In addition, the linkages that the established industries would have with other domestic activities such as with producers of raw materials, and capital goods would develop and/or increase productivity thus contributing to the growth or efficiency of the products of final goods.

Unfortunately, this did not happen. Most of the industries that were established required protection or the extension of protection over a time span that was very long. The factors that prohibited their growth to the level where they would enjoy efficiency and economies of scale had their origin in protectist

measures which most often created a monopolistic environment where the pursuit of higher profit could easily be satisfied by increasing prices rather than by augmenting output and improving quality. At the same time the essential linkages either failed to materialize or were inadequate. Thus a review of these specific policy instruments that created such an environment is necessary at this juncture.

2.2.3.1 Tariff Protection

Based on its heavy emphasis on import-substituting industrialization, Ethiopia provided tariff protection to home industries.

Although tariff protection had a revenue effect, which was important, there existed a clear evidence that the policy in Ethiopia was enacted more for protection since 1951 and particularly after 1969. This can be seen from the fact that the customs duty on textile products showed a leap from a low of 35 percent in 1951 (legal Notice No. 153 of 1951) to a high of 100 percent in 1969 (legal Notice No. 153 of 1969). This provided a substantial protection for the 12 textile factories established during the 1957-1962 period. Between 1963-1967 additional textile factories were either constructed or expanded.[6] Moreover, the sixties witnessed a great deal of expansion within the already existing mills. As of the end of 1967, six textile factories were either under construction or expansion.[7]

In addition to customs duty, imported textile products were liable to 18 percent transaction and 1 percent municipal and excise taxes based on value which altogether combined to provide high protection to the textile industry in Ethiopia.

2.2.3.2 Import Licensing

Among the protective policies, import licensing and the allocation of foreign exchange are the two mutually reinforcing instruments of industrial protection in Ethiopia. Currently, the Ministry of Foreign Trade is vested with the powers to regulate the import and export markets and to grant both import and export licenses. The Ministry provides import licenses for one year under the following terms and conditions:

i) the importer is financially sound

ii) the product to be imported is consistent with the country's import needs; and

iii) the distribution of the product is not being hampered by unnecessary stockpiling.

Moreover, payment abroad for import requires foreign exchange permits, which are obtainable upon presentation of valid import license, and the submission of evidence of adequate insurance. The import licensing policy framed in this way combined with administrative delays provides a sufficient ground of protection for the textile industry in Ethiopia.

2.2.3.3 Foreign Exchange Control and the Exchange Rate

i) Foreign Exchange Control

Control of foreign exchange is a common feature of the Ethiopian economy and came into being in 1950. Since then and until 1963, the State Bank of Ethiopia was the sole authorized dealer in foreign exchange; and the Bank had an exchange control department.

At present, the exchange control policy is administered by the National Bank of Ethiopia (NBE) which regulates the total inflow and outflow of foreign exchange. No foreign exchange receipts or payments could be effected without its approval. However, the NBE has the right to delegate its authority to other banks under its administration. All payments abroad require licenses issued by the exchange controller. The foreign exchange control policy in Ethiopia serves as a machinery by which domestic industries are protected.

ii) The Exchange Rate

Ethiopia has pursued a fixed exchange rate policy as a result of which the Ethiopian Birr is pegged to the US dollar since 1945 at the official rate of Br.2.50 =US$ 1 between 1945-71, Br.2.32 = US$ 1 between 1971-1973 and Br.2.07 = US$ 1 thereafter.

This level of exchange rate overvalue the currency. According to International Monetary Fund, Ethiopia's import weight real effective exchange rate appreciated by 37.5 percent against the currencies of its major trading partners between 1975 and 1982.[8] The study conducted by Befekadu in 1985 also reveals that the Ethiopian currency is overvalued by as much as 40 - 70 percent.[9] An overvalued exchange rate has a negative impact on the economies of developing countries; it under protects some industires; promotes dependence on imports and by discouraging exports of manufactured goods. The overvalued exchange rate does not seem to have significant negative effect on manufacturing sector in-general and the textile sector in particular. This is due to the fact that the cheap imports in domestic currency is

compensated for by stiff tariff and non tariff barriers as discussed above.

2.2.3.4 Pricing Policy

An extensive system of price controls has been in practice in Ethiopia. This dated as far back as 1943. Since then and until 1974, the power to regulate and fix prices was entrusted to the then Ministry of Commerce, Industry and Tourism. In the post-revolution period, price controls have taken on greater importance with the aim of controlling inflation and influencing income distribution and the level of welfare.[10] The first step in this direction was the issuance of public Notice No. 18 of 1975, which resulted in a general price freeze of all commodities manufactured locally.

Beginning in 1980 the Office of the National Committee for Central Planning has been in charge of administering prices. Since then, the Government has controlled prices of goods, and publicly owned enterprises are not allowed to adjust their prices without the approval of the Office even if costs escalate. This poses a problem on firms' operations because while the prices of the output is fixed costs of inputs and especially imported inputs are not controlled.

2.2.3.5 Employment and Wage Policy

It is well known that a coherent and properly formulated employment and wage system will make a substantial contribution towards creating a conducive environment for greater economic efficiency. Prior to 1974 the employer's desire to optimize profits and the competitive labour market formed the basis for wage determination

in Ethiopia.

Since 1975, however, employment, wage and benefits in publicly owned industries have been governed by the principles which emanate from the labour Proclamation No. 64 of 1975 and the guide-lines for collective agreements issued by the Government. The proclamation has rendered a minimum wage applicable to all workers regardless of the type of work and the number of hours or days worked during a given pay-period. This clearly indicates that wages payment have no stimulating effects.

Furthermore, the wage controls policy has ensured that increase in the wages of skilled workers have been significantly less than the rate of inflation. As aptly pointed out by John Weiss in his recent study on Ethiopia wages have been kept down relative to the growth of productivity, and based on an estimate of the decline in the real wage for skilled workers, the output foregone of skilled workers on average is found to be as much as 48 percent above the average market wage. Even after converting this wage to world prices the excess of output foregone still remains higher than the market wage by 10 percent.[11] This implies that the economic cost of skilled workers, even at efficiency prices, is above the market wage.

Thus the shortage of skills and inadequate incentives constrain the efficiency of the manufacturing industry in Ethiopia.

2.2.4 Structure and Performance

2.2.4.1 Introduction

Prior to 1974, the Ethiopian manufacturing sector in general and the textile industry in particular was constrained by a number of structural problems. The output of the medium-large-scale industrial sector has been dominated by consumer goods industries. The share of food, beverage and textiles in the manufacturing value added was as high as 80 percent in 1962, dropped to 68 percent in 1970 and 66 percent in 1975 (Table 2-1).

TABLE 2-1

STRUCTURE OF MEDIUM-LARGE SCALE MANUFACTURING VALUE ADDED HISTORICAL: 1962-1975

Industrial Group	1962 Share (%)	1965 Share (%)	1970 Share (%)	1975 Share (%)
Food Processing	30	30	25	25
Beverage	9	15	11	12
Tobacco	3	3	3	5
Textiles	41	29	32	29
Leather/Leather Goods	4	5	4	6
Wood and Wood Products	3	3	2	2
Paper and Printing	2	2	2	2
Chemicals	2	3	10	18
Non-Metallic Mineral Products	5	5	5	2
Metal and Electricals	1	5	6	5

SOURCE: Computed from CSO Sources in Eshetu Chole and Teshome Mulat "Pattern of Industrialisation and Impact on Employment and Incomes in Ethiopia," September 1983.

Its contribution to GDP was 2.5 percent in 1962 and increased to 5.2 percent in 1972. The overall share of the industrial sector in GDP increased from 6.6 percent to 9.9 percent in the same period (Annex I). Therefore, the influence of the industrial sector on the economic transformation of the country was negligible.

Even after the radical change in general development policy in 1974, the industrial sector displays almost the same characteristics despite higher average growth relative to the overall growth of the Ethiopian Economy (Annex II).

The structural composition of the sector has not changed much and is still dominated by the production of consumer goods, although the magnitude has on average declined to some extent over time. The food, beverage and textile industries have maintained their dominance in industrial value added (see Table 2-2 below).

TABLE 2-2

STRUCTURE OF MEDIUM - LARGE-SCALE MANUFACTURING

VALUE ADDED 1976-1980 IN PERCENTAGE

Y E A R Industrial Group	1976 Share (%)	1977 Share (%)	1978 Share (%)	1979 Share (%)	1980 Share (%)
Food Processing	18.5	18.9	32.9	22.4	26.5
Berverages	13.6	13.5	10.6	8.5	9.5
Tobacco	5.8	6.9	4.6	5.4	4.1
Textiles	27.9	29.8	22.5	24.0	22.5
Leather/Leather Products	6.4	5.0	4.8	5.5	4.0
Wood and Wood Products	3.3	3.7	3.4	2.6	2.8
Paper/Paper Publishing	2.4	3.9	3.3	2.5	0.8
Printing and Publishing	2.8	2.8	2.9	2.5	2.8
Chemical Including:					
Petroleum Refinery	12.9	10.2	8.8	20.8	19.8
Non-Metallic Mineral Products	2.5	1.8	1.9	2.5	2.2
Metal Including Electrical Machinery	3.9	3.5	4.3	3.4	4.3
	100.0	100.0	100.0	100.0	100.0
Value Added at Factor Cost (Mill. Birr)	387.5	433.6	543.2	760.7	729.2

SOURCE:- CSO, Statistical Bulletin 35, June 1983.

When we look at the profile of the external trade of the country we find that manufactured goods represent a small fraction of the country's export trade (Table 2-3 below).

TABLE 2-3

TOTAL EXPORTS AND EXPORTS OF MANUFACTURED GOODS IN ETHIOPIA '000' BIRR

Y E A R	1970	1975	1980	1983
Export of Manufactures	12870	33545	53829	61470
Total Exports	294622	390244	878320	832471
Share of Manufacturing Export in Total Exports (%)	4	8	6	1

SOURCE:- Israel K.Mariam (1986) Prospects and Constrains of Developing Export-Oriented Industries in Ethiopia.

As can be inferred from the above table between 1970-1983 export of manufactured goods accounted on average for 6 percent of total exports. This indicates that the contribution of the manufacturing industry to foreign exchange earning is minimal.

In sharp contrast to exports, the industrial sector is heavily dependent on imports. This dependence is mainly couched in terms of capital, intermediate and raw material inputs. In the period between 1970 and 1982, the share of industrial imports in overall industrial supply increased reaching 43 percent in 1976 and deceasing to 35 percent in 1982 (Table 2-4).

TABLE 2-4

STRUCTURE OF IMPORTS AND THE MANUFACTURING INDUSTRY

	1970	1976	1977	1978	1979	1980	1981	1982
Import of Consumer Goods	140.0	241.3	211.1	253.1	183.9	297.4	313.3	241.7
Import of Raw Materials and Intermediate Products	93.0	152.7	174.9	282.7	351.5	390.0	403.3	398.2
Import of Capital Goods	101.0	95.0	125.0	198.2	219.8	224.6	243.4	408.1
Industrial Imports	334.0	489.0	511.0	734.0	755.0	912.0	960.0	1048.0
Gross Value of Industrial Products	578.0	875.0	963.0	970.0	1417.0	1843.0	1844.0	1930.0
Domestic Industrial Supply	912.0	1364.0	1474.0	1704.0	2176.0	2755.0	2804.0	2978.0
Consumers Goods Import Ratio	0.42	0.49	0.41	0.34	0.24	0.33	0.33	0.23
Consumer Goods Domestic Supply Ratio	0.15	0.18	0.14	0.15	0.80	0.11	0.11	0.80
Raw Materials and Intermediate Goods Import Ratio	0.28	0.31	0.34	0.39	0.47	0.43	0.42	0.38
Capital Goods Import Ratio	0.30	0.19	0.24	0.27	0.29	0.25	0.25	0.39
Industrial Import Ratio	0.37	0.36	0.35	0.43	0.35	0.33	0.34	0.35
Industrial Import-Industrial Production Ratio	0.58	0.56	0.53	0.76	0.53	0.49	0.52	0.54

NOTE:- Values are in Million Birr

SOURCE:- (1) CSO, Survey of Manufacturing Industries, Various Issues.

(2) Customs Head Office, External Trade Statistics, Various Issues.

The drop in the share of industrial imports since 1978 reflects the drop in the share of finshed goods imports for final consumption due to import substitution in consumer goods and is partly attributed to the stringent foreign exchange control for imports of luxury items.

The share of imports of consumer goods in total domestic supply (defined as the value of domestic production plus the value of competing imported products less any exports) on average accounted for about 13 percent in the period 1970-1982.

Insustrial import dependence has shown a steady increase between 1970-1982. This ratio, as shown in Table 2-4, stablized at 56 percent, indicating the absence of signs of a decline in import dependence.

In spite of the relatively diminishing share of imports of finished goods, the share of imported inputs and capital goods in total industrial cost has been increasing over time, i.e. import substitution was negative in intermediate and capital goods. As can be seen from Table 2-4, the share of capital and intermediate inputs together accounted for an average of 65 percent between 1970-1982.

When we examine the sectoral import dependence of the Ethiopian manufacturing industry, heavy dependence has been observed in chemical, metal, and tobacco industries while food, wood and furniture, and leather and shoe industries are less dependent. Beverage, non-metallic minerals and textile industries are also substantially dependent on imports. The percentage of sectoral dependence for selected years is shown below.

Although it has not been possible to get the exact volume of production prior to 1974, available statistics by and large indicate the growth in the volume of textile production over time. In 1970, all the factories combined produced 71,288,362 sqm of fabrics and 6,611 tons of yarn (see Table 2-6 below).

TABLE 2-6

PRODUCTION OF FABRICS AND YARN IN 1970

BY PRODUCING FIRMS

Sr.No.		Fabrics (sq m)	Yarn (ton)
1	Dire Dawa Textile Factory	23,759,865	1,094
2	Asmara Textile Factory	11,844,000	960
3	Akaki Textile Factory	19,394,760	-
4	Bahir Dar Textile Factory	12,852,000	778
5	Ethiopian Fabrics	3,437,737	-
6	Adey Ababa Yarn Factory	-	1,450
7	Idget Yarn Factory	-	1,470
8	Ethiopian Textile Industry	-	859
	T o t a l	71,288,362	6,611

SOURCE:- Agricultural and Industrial Development Bank.

2.2.4.3 Spatial Distribution and Growth

There a.e 18 state owned textile factories under the National Textile Corporation. Textile mills are relatively more scattered than most other industries in Ethiopia. The pattern of distribution has been largely determined by the concentration

of the market and the availability of infrastructure. Ten factories are located in Shewa Administrative Region, five factories in Eritrea, and the rest are distributed among the three administrative regions of Harerge, Gojam and Wello. The textile industry has been growing faster than other manufacturing industries.

There are basically two factors which account for the rapid growth of the sub-sector. These are the growth of domestic demand for textiles and the Government's promotional policy which inturn attracts high investment to this sector. Consumption is directly related to the growth of population, urbanization and income per capita.

2.2.4.4 Institutional Set-up

Prior to 1974, the responsibilities pertaining to industrial development in the country were vested in the Ministry of Commerce, Industry and Tourism, mainly in the Investment Committee set up by Decree No. 51 of 1963. The Committee was responsible for issuing guidelines regarding the implementation of industrial policies and providing incentives to both foreign and national investors.

As part of the structural Social and Economic changes brought about by the Revolution of 1974, the Government nationalized industries which were organized into three hierarchically structured levels of management at the top of which is the Ministry of Industry which exercises overall control. Management is exercised through ten corporations, organized by types of industrial activity. Each corporation subsumes a set of industries under its management.

With the formation of the National Textile Corporation in July, 1975, 13 nationalized industries came under its direct administration and control. The National Textile Corporation administers 18 factories currently.

2.2.4.5 Manpower and Skill Development

Employment in the modern textile sector started with 400 workers at the Dire Dawa Textile Factory in 1939. This number gradually increased and reached 15,802 workers in 1964 and further increased to a record level of 30,704 in 1980 (Table 2-7). The proportion of employment created by the textile industry has always been high and has accounted for 43 percent of the permanent industrial employment in recent years.

TABLE 2-7

EMPLOYMENT IN THE TEXTILE INDUSTRY

YEAR	EMPLOYMENT
1964	15,802
1965	17.040
1966	19,271
1967	NA
1968	21,656
1969	21,610
1970	22,342
1971	23,574
1972	23,926
1973	23,510
1974	NA
1975	NA
1976	20,201
1977	26,802
1978	27,094
1979	28,519
1980	30,704

NOTE:- NA: Not Available

SOURCE:- Ministry of Industry

With regards to expatriate personnells, the available statistical record indicates that in 1975 about 323 foreign personnells occupied the important posts, the great majority of them being Indians, Egyptians, Italisns and Greeks (see Table 2-8).

Ethiopians were limited to low level technical and manual activities partly because of their low level technical and managerial know-how; since nationalisation the stituation has changed and foreigners were replaced by nationals. At present almost all managerial, professional and skilled positions are held by Ethiopians.

TABLE 2-8

NUMBER OF EXPATRIATE PERSONNEL

IN THE TEXTILE SECTOR IN 1975

Sr.No.	Nationality	Number	Percentage
1	Indians	238	73.8
2	Egyptians	29	9.0
3	Italians	24	7.4
4	Greeks	12	3.7
5	British	6	1.9
6	Americans	4	1.2
7	Japanese	2	0.6
8	Libanons	2	0.6
9	Swiss	2	0.6
10	Jewish	1	0.03
11	Luxmburg	1	0.03
12	Armenians	1	0.03
13	Yemeni	1	0.03
14	Germans	-	-
	Total	323	

SOURCE:- National Textile Corporation

2.2.4.6 Contribution of the Textile Industry to the National Economy

The role of the manufacturing industry in the Ethiopian economy is an unpretentious one indeed. In this sector the textile industry represents the single most important category.

Table 2-9 summarizes the basic information concerning employment, gross value of production, wages and salaries and new capital investment in the textile industry as a percentage of the entire manufacturing sector for the period 1964-1980.

TABLE 2-9

ESTIMATED EMPLOYMENT GROSS VALUE OF PRODUCTION, WAGES AND SALARIES AND NEW CAPITAL INVESTMENT OF THE TEXTILE INDUSTRY AS A PERCENTAGE OF THE ENTIRE MANUFACTURING FOR THE PERIOD 1964-1980

Year	Employment	Gross Value of Production	Wages and Salaries	New Capital Ecpenditure
1964	33.3	28.5	28.2	20.9
1965	40.2	29.3	30.8	19.2
1966	41.6	28.9	30.4	27.4
1967	44.6	33.7	33.5	17.2
1968	NA	NA	NA	NA
1969	NA	NA	NA	NA
1970	48.8	35.3	39.3	NA
1971	44.1	33.1	32.4	33.7
1972	43.6	31.1	30.7	18.4
1973	41.1	30.9	32.2	45.2
1974	39.8	31.9	20.7	30.3
1975	44.0	28.5	32.2	31.0
1976	43.9	26.2	35.1	10.1
1977	43.3	23.8	30.5	23.5
1978	37.1	19.8	27.3	18.5
1979	38.2	19.7	32.7	16.4
1980	37.2	17.6	32.6	32.2

NOTE:- NA: Not Available

SOURCE: - Wolday Amha (1986) The Problem of Wage Determination in Ethiopia: A Case Study of the State owned Textile Industries (Unpublished M.Sc. Thesis. Addis Ababa University).

As can be seen from the above Table the textile industry on average accounted for 41.4 percent of employment, 28 percent of the gross value of production, 32.4 percent of wages and salaries and 25 percent of new capital investment of the manufacturing sector. This means that the textile industry has been a significant contributor to and absorber of resources committed to the industrialization process in Ethiopia.

Moreover, although there were no exports of textile products by the Ethiopian Textile Industry until 1980, the situation has changed and ever since the value and the volume of exports is on the increase.

In sum, the textile industry represents a very important component of Ethiopia's manufacturing industry - - important interms of output, employment, and investment. It is also an industry that has shown fairly fast growth. As in many LDCs it represented an obvious starting point for a policy of import subsitution. Therefore, a careful evaluation of its economic efficiency, where efficiency is measured by the value of domestic resources needed to save or earn a unit of foreign exchange, seems to be a precondition to economic restructuring of firms and redressing industrial policies so as to attain growth in the Ethiopian economy. To provide such an evaluation it is the ultimate aim of this study which presents estimates of the extent of incentives accorded to the firms and the magnitude of the their efficiency. Before we embark on this, however, attempts will be made to review the existing litrature on maeasuring economic efficiency, this task is the central conern of the next chapter.

FOOT-NOTES

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3. PMAC (1975) Declaration of Economic Policy of Socialist Ethiopia (Addis Ababa), PP. 10-11.
4. "Definition of Powers and Responsibilities of Ministers Proclamation" Proc. 127/77, Neg.Gaz. 36th year, No. 29.
5. ONCCP (1985) The Ten-Year Prespective Plan, P. 241.
6. Ministry of Commerce and Industry (1968) "Development of the Textile Industry" Ethiopian Economic Review, No. 1, P.28.
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CHAPTER THREE

3.0 MEASURING ECONOMIC EFFICIENCY: SURVEY OF THE LITERATURE

3.1 Problem of Definition and Measurement

The literature on the definition and measurement of economic efficiency is broad and varied as are the conceptual and methodological approaches pursued by different authorities. The problem arises, in the first instance, from the lack of conceptual clarity conveyed by the term. To begin with, it is not an independent but a comparative measure. According to Webster's Dictionary of the English language, efficiency is defined as "ability to produce a desired effect, product, etc. with a minimum of effort, expense or waste." This definition to efficiency presupose that a "minimum" norm or standard against which the objective achieved is to be compared exists and that the problem of measurement is non-existent.

This, however, is imprecise and therefore, gives rise to different approaches of understanding, measurements and evaluations leading to the conclusion and judgement of whether a given state is efficient or inefficient.

This imprecision, both of the concept and application of measurement, has been the cause of the wide literature on the subject alluded to above. In the following pages a selection of the more crucial thoughts and methods would be summarized.

3.2 Definition of Efficiency

In economic literature, efficiency is defined both qualitatively and quantitatively. It should however be noted that most often the definitions are more in the nature explanations of

techniques of measurement rather than the elucidation of the concept. Some writers define efficiency in relation to certain preconceived notions while others relate their definition to certain measurement techniques. Much more than theoretical nicety, practical considerations have influenced the definition and actual measurement of efficiency. Because of this, there is an inevitable overlap between the definition and measurements of efficiency.

Before the cliometric revision of post 1870 British economic history, economists defined economic efficiency qualitatively. The most popular view of the traditional economists was that of the British third generation industrialists failed as innovators of new technology and methods, as proponents of technical education, as investors in new industries and vigorous salesmen abroad.[1] Considerable quantitative evidence on the rate of British, American and German adoption of new techniques was marshalled to test the technological change. Accordingly, the late victorian and interwar period were viewed as periods of economic failure.[2] Rejecting the qualitative test of British technical progress favoured by traditional economic historians, the econometric school in the United States developed a new approach both in the definition and techniques of measurement of efficiency in terms of productivity index and this technique was used as a standard against which the success and failure of an economic activity is measured and compared.[3]

Stiglar (1958) and Saving (1961) used the survival techniques in defining and measuring industrial efficiency. In their explanation they suggested that those economic activities which survive and prosper under competitive condition are the

most efficient. As can be inferred from the above definition, Stigler and Saving not only failed in defining efficiency properly but also failed in identifying at what cost and under what conditions a given venture had survived. For example, efficient firms may be driven out of a business by such practice as predatory pricing or unusual events.[5] Neither are all those which survive unusual catastrophe necessarily those which are most efficient; nor expected on average to contribute most efficiently to the economy.

While Saving and Stigelar were circumspect about the use of the technique for evaluating industrial efficiency Weiss (1964) claims that it has been used as an an indicator of competitive effectiveness and therefore as one basis for evaluating efficiency in terms of resource use.

The other important concept of economic efficiency in economics is the one developed by Pareto. According to the Paretian definition, when economic efficiency is achieved, productive resources are so allocated among alternative uses such that any reshuffling of the pattern will not improve any individual's well being and still leave the other individuals at least as well-off as before.[6] The paretian efficiency requires three conditions, namely, efficiency in production, efficiency in distribution and optimal conformity between the composition of production and the want of the society. However, the practical relevance of this theory has not been as neat as it sounds. The resolution of whether and under what conditions a society can attain Pareto's optimum has eluded economists. The neo-classical theory suggests that paretian optimality tends to be satisfied under conditions of perfect competition.

However, it is widely recognized that in practice there are frequent market failures which in turn provide a basis for government intervention. Nevertheless, economists vary in their assessment of the importance of market failure. Some argue that besides the prevalence of market failure government interference may add to economic inefficiency, either because of the X-inefficiency[7] in government organizations or intervention and/or because of various failures expected to arise from the political and administrative mechanism of resource allocation.

A serious limitation of the static paretain efficiency is that its achievement can interfere with economic growth. Schumpeter thought that imperfect competition may provide the necessary push for greater technical progress and innovation in the economy. By the same taken, in the long-run, an imperfectly competitive economy may be more productive and efficient than a perfectly competitive one.[8]

Some writers relate the concept of economic efficiency to the concept of productivity.[9] In their analysis of industrial efficiency they use productivity as a comparison of an output with the service of one or more resources used in producing the output.

Guangyuan defines economic efficiency in terms of labour productivity and he refers to the ratio of labour consumption to economic results. According to him, the smaller the amount of labour consumed, the greater the labour productivity will be. Conversely, the greater the labour productivity, the larger the economic efficiency. What we can infer from this is that, taking society as a whole, the economic efficiency of the whole society is determined by the extent of labour productivity.

When a given economic activity raises its labour productivity it will either yield more economic efficiency within the unit itself or transfer the labour saved to other units in order to create additional economic efficiency. According to this line of argument sound economic growth in any society comes mainly from labour productivity. Guangyuan argues that "man is the most important of all factors of production in a society and hence waste of manpower is the largest waste ever."[10] According to this same author, the full utilization of human resources occupies a critical position in the effort to enhance economic efficiency.

Nonetheless, the economic efficiency that can be achieved in any society or economic unit is the combined result of all factors of production, i.e. land, labour and capital. Therefore, in measuring economic efficiency, the contribution of all factors of production as a whole should be taken into account so as to see the comparative advantage or disadvantage that a nation has in promoting or sustaining a line of production using domestic resources.

3.3. Methods in Measuring Economic Efficiency

The general concern with the problem of enhancing economic efficiency both in developed and LDCs has led to an extensive literature on the appropriate methods to use in evaluating economic activities. These include, among others, the neo-classical comparative production functions of Cobb-Douglas and constant elasticity of substitution (CES), total factor productivity ratios, the comparative cost ratios, the Cost-Benefit and the Domestic Resource Cost (DRC) methods, some

of which are briefly examined below for the purpose at hand.

3.3.1 The Comparative Cost Method

The comparative cost method is one approach that has been used in evaluating industrial efficiency. The comparative cost ratio is defined as the ratio of ex-factory value of a product to CIF price of closely competing imports. If the ratio is greater than one a given economic activity is said to be uncompetitive and has a cost disadvantage and an activity with cost ratios below one and is said to be competitive.

One important aspect of the analysis of comparative cost ratios on the basis of ex-factory prices may be due to high profits or high factor prices in the relevant industries. If the factor costs do not represent scarcity prices but contain large monopoly or rent elements due to the institutional factors and imperfections of markets, "the high ex-factory price is not an index of comparative disadvantage or inefficiency but represents a transfer from the rest of the community to the factors employed in industries concerned."[11] This requires corrections for the various distortions incurred or an allowance must be made for factors such as excess profit, scarcity price of foreign exchange, etc. If this is done, the comparative cost disadvantage of a venture may decline and a venture may have a cost ratio below one and still become comperitive.

According to Islam, the correction of the cost ratios for the relative overvaluation of the currency is only a partial measure in so far as it corrects the c.i.f. price of competting imports in domestic currency and does not correct the import component of the domestic ex-factory price in domestic currency. The import component becomes more expensive in terms of domestic

currency consequent on a correction for the overvaluation of foreign exchange.

The cost ratios may also be affected by the existence of excess capacity of a structure of market where the firms dominate.[12]

There are also many instances of indirect taxes in the form of sales and excise duties on the manufactured goods produced at home. The indirect taxes are not relevant for an analysis of comparative costs and efficiency of manufacturing industries. On the other hand, the c.i.f. prices of competing imports on which comparative cost ratios are based include the cost of transportation, a charge which will affect the c.i.f. prices and cost ratios as an indicator of the cost disability or the relative inefficiency of industries.

The use of this method in evaluating industrial efficiency requires data on disaggregated basis. However the data on Ethiopian economy is not well adapted to the application of this method.

3.3.2. The Cost-Benefit Method

The Cost-Benefit analysis is another method that has been widely used in measuring economic efficiency from the national point of view. The distingushing characteristic of this measure is that it takes into account not only the direct effects of factors that affect economic performance but also of its indirect and intangible effects as well.

The economic evaluation of a given activity using the Cost-Benefit method is usually made to ascertain the overall impact of the project, the important requirement of which is the correct identification of the various inputs and outputs. Once a

project's inputs and outputs have been identified different strategies would be followed to value the inputs and outputs of which the more prominent one is the border price approach originally developed by Little and Mirrlees (1968). Accordingly, international prices will be used to value traded goods while the domestic market prices of the non-traded goods will be converted into international prices by using a conversion factor.

Cost-Benefit analysis is originated in the U.S.A. in the 1930's and was first applied to water resource development.[13] The Flood Control Act of 1936 set forth the basic requirement that the benefits to whomever they may occur must be in excess of the estimated cost. However, the specific criteria for assessing costs and benefits have not been spelled out by the 1936 Act. It was only in 1950 that an inter-agency committee attempted to introduce uniformity in the standard criteria, employed in project evaluation. It published a set of recommendations in the Green Book. These, however, never attained official standing. Towards the end of sixties and early in the seventies considerable efforts have been made on devising relevant approaches in the field of cost-benefit analysis. Consequently, studies have been prepared under the auspices of the OECD (Little and Mirrlees) and the UNIDO outlining in considerable detail alternative variants of the familiar internal rate of return and net present value approaches.

The two approaches mainly differ in the numeraire. In Little and Mirrlees the numeraire is uncommitted income in the hands of the government measured in terms of convertible foreign exchange. The actual calculations are performed in terms of

domestic currency with foreign prices converted at official exchange rate. This is, of course, based on the presumption that border prices are the appropriate starting point in the derivation of shadow prices so that the process of estimating economic costs and benefits is most conveniently carried out in terms of border values.

The numeraire used in the UNIDO manual on the other hand is the aggregate consumption expenditure measured at domestic prices. This approach requires the use of a shadow exchange rate (SER) to convert foreign exchange items into values in terms of aggregate consumption based on the concept of "willingness to pay" by the Consumer.

While this modern technique of project appraisal is based on an examination of the efficiency of resource use in a general equilibrium setting and provides a reasonably effective guide for decision making. It suffers, however, from many limitations as it does not deal effectively with the critical problems of interdependencies, indivisibilities, and return to scale. This is due to the failure of welfare economics to provide an adequate substitute of the paretian system, and to clarify the character and extent of interdependencies.

3.3.3 Domestic Resource Cost

Another modern technique of economic appraisal that has been derived from a common analytical framework based on an examination of the efficiency of resource use ingeneral equilibrium setting is the Domestic Resource Cost (DRC) method. This is a single cost-benefit indicator giving the domestic factor cost at shadow prices of generating a unit of value added at

international prices.

3.3.3.1 Theoretical Considerations

The criteria for efficiency of an economic activity is whether or not it will increase the value of total production at world prices as compared to the existing situation, assuming that the distortion policy on the existing goods continues unchanged.

In a world of trade restrictions and distorted foreign exchange rate, "analysis of economic efficiency of an industry is now increasingly understood as predicated on the notion of trade efficiency against which the actual performance of the industry can be measured."[15]

As indicated earlier considerable efforts have been spent on devising models which should be analytically satisfactory and at the same time practically useful for the measurement of the apportunity cost of generating or saving foreign exchange as well as for the measurement of economic costs of various restrictive systems. Among these the domestic resource cost method adequately suits the purpose.

The concept and methods of DRC was originally developed in the early fifties in Israel, where it was applied quite extensively by government planners as a means of project evaluation under the conditions in which the official exchange rate and the price of traded goods were distorted and called the cost of dollar or exchange cost.[16] The method later gained popularity and was applied by various authors in different countries and settings.[17]

The method measures the comparative advantage or economic efficiency that a country may have in promoting or sustaining a line of production using available resources in terms of net foreign exchange earning or saving.

The major use of the method in efficiency analysis came from the belief that industrial development strategy pursued under protective policies were seen as sheltering high cost and inefficient ventures. Sheltered domestic industires which do not have to compete internationally have no intention to lower costs or raise quality standards.[18] John Weiss argued that when technical change does take place under protection, it is not necessarily in an economically justifiable direction in terms of resource use.[19] This is because sheltered domestic producers who do not have to compete internationally have no incentive to lower costs or raise quality standards. This brings cost to the economy in both ways. Therefore, it is essential to apply the principle of comparative advantage in promoting industrialization under protection.

The fact that the principle of compartive advantage is to be adopted does not imply the assumption that the economy will move towards an external commercial policy of free trade. The principle is used to asses, the advantages or disadvantages to the economy of producing goods which can be bought and sold on the international market. In this regard DRC explicity incorporate this principle, since, as far as traded good production is concerned, investment will only be justified if domestic economic costs of production are below the relevant international prices. The belief is that domestic costs should reflect the opportunity cost to the economy of committing resource to investment.

Several DRC-type measures of project merit discussion exist the most common of which are the "simple DRC" and the "Refined" or Bruno Ratios. These indicators rely on single-year data. The year is usually the first year of full or near full scale production.

The "Simple" DRC is computed through adjusted costs. Costs are adjusted to eliminate local duties and taxes and divided into local currency ("Birr") and foreign currency ("Dollar") categoreis. If something is purchased directly from a foreign source, it goes down as a dollar cost. Traded output is valued at f.o.b. or c.i.f. border prices to find the "Gross" benefit of dollar earning or saving, from which direct dollar outlays for inputs are deducted to obtain a "net" benefit. The ratio of Birr resource cost to net dollar benefit is the cost in Birrs of earning or saving one dollar. The "Refined" DRC, or Bruno Ratio, uses the border priced cost of locally procured traded inputs instead of their domestic market costs. The Refined DRC captures the effect of protection and price controls on domestic inputs.[20]

In ex-post investment evaluation the DRC becomes an index of cost of promoting exports and cost of protection of import substitute. It is the ratio of the shadow cost of labour and capital of the economic activity to its world value added.

Mathematically, the Domestic Resource Cost coefficient is defined in terms of the ratio,

$$\frac{Dj}{Fj} = \frac{\text{Economic value of primary inputs}}{\text{Value added at international prices}}$$

Where Dj is the economic value of primary inputs measured in terms of shadow prices or opportunity costs, of the domestic resources used in the production of a unit of the j^{th} product, Fj is the foreign exchange benefit derived from the production of one unit of the j^{th} product. The gross foreign exchange benefit would be the c.i.f. import price of the product if it is an import substitute or f.o.b. export price if it is an export promotion. From this gross figure should be deducted the foreign exchange costs associated with domestic production giving a figure for net foreign exchange benefits per unit of output.

In the DRC calculation the numerator reflects the economic opportunity cost of domestic resources and the denominator the net value added created by the j manufacturing activity at economic efficiency prices.

A DRC less than one indicates economic efficiency and comparative advantage, greater than one expresses economic inefficiency and comparative disadvantage. The former implies foreign exchange saving whereas the later means excess of resource cost over foreign exchange benefit. Furthermore, a negative DRC indicates a net foreign exchange loss, since DRC is negative where the value added at international prices is negative.

In other words, the lower domestic cost per unit of foreign exchange saved, the more efficient is the allocation and use of resources. Given this, an additional investment to replace imports or promote exports and thereby save or earn foreign exchange seem desirable.

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In contrast, a higher DRC implies that resources allocated to a given venture have not been efficiently used. In this connection DRC has been seen as the best measure to express the opportunity cost of foreign exchange through import substitution or export promotion. However, in spite of the treatment the DRC technique has received in the literature, there remain several conceptual problems concerning its measurement and interpretation. In the following section we will discuss some of these problems and questions concerning the DRC.

3.3.3.2 Measurement Problem[21]

The measurement of DRC involves certain questions and to use DRC as an effective tool, these questions should be handled so as to improve the accuracy and relevance of DRC calculations in measuring the economic efficiency of manufacturing industries in LDCs. The most pertinent of these problems are the concept and treatments of capital cost, problems involving the use of border prices and the problem of timing of costs and benefits.

i) The Concept and Treatment of Capital Cost

The concept of capital cost is one of the problems that characterizes the DRC calculation. DRC calculations are made on per unit basis. This means that one must express all costs associated with a given industry in terms of their contribution to the cost of one representative unit of output.

This approach presents a number of problems for DRC calculation, of which perhaps the most difficult

concerns the returns of capital (repayment of principal or depreciation) and returns to capital (interest and profit).

One possible approach to overcome this problem would be to choose an average rate of output over the life of the project, assuming that the level of output remains fixed at that level over the span of the project and calculating the required cash flow on a per unit of output basis. By so doing it is possible to decompose the cash flow figure into returns of capital and returns to capital (for that part of capital not depreciated). However, even if the total required cash flow from an investment is treated as constant, its breakdown as between return to capital and return of capital is not. The implied breakdown might show a higher profit component in earlier years and a higher depeciation component towards the end of the project. This pattern is unimportant as long as total cash flow is treated together; but if we need to provide a domestic-foreign breakdown of each component separately, then the differential time pattern becomes significant especially where foreign ownership is involved. The allocation as between foreign and domestic costs of the return of capital is determined by the source of the physical capital assets while the allocation of the return to capital is determined by the nationality of the owners of the financial capital invested.

The problem, then, is one of providing an appropriate breakdown of the total cash flow between these two components for a representative year. This is because, as may be seen, in

actual operation of a project one flow is increasing over time while the other decreases; one series, then, will be concentrated near the beginning of the project, the other near the end, and we know that the timing of costs matter in project evaluation.

It is one of the basic principles of project evaluation that one should look at a project in terms of return to total capital independent of the method of finance and how that return is divided between domestic and foreign capital is considered a secondary matter.

If on the other hand, a project is financed partly from domestic capital and partly from abroad then these distinctions are not irrelevant to DRC evaluation. In principle, one could obtain the actual interest rates on domestic and foreign loans in a given project, calculate the return to equity capital, and use this information to divide the total return to capital portion of the cash-flow figure into domestic and foreign components. In practice, it would generally not be worth making this calculation unless the debt-quity ratio is substantially different as between domestic and foreign sources. Ingeneral it would be an acceptable approximation to ignore these questions, dividing the profit portion of the cash flow between domestic and foreign components in proportion to the national source of capital, debt plus equity. Besides, this is not a problem for the objective at hand, since there is no foreign ownership or participation in the state owned textile industries in Ethiopia.

ii) The Use of International Prices

One of the principles underlying the use of the DRC measure in measuring the economic efficiency of a project is the use of international prices in computing the net foreign exchange benefits of the venture. While it is always possible to find c.i.f. and f.o.b. price data to use in these calculations, there are several reasons why these may not be appropriate.

a) Transfer pricing: An increasing share of total international trade is taking place between branches or subsidaries of multinational corporations. For such trade, the price at which the transfer is reported to take place may bear little relation to either costs of production or the price at which the commodity in question would be bought or sold between independent companies. Where the commodity is traded competitively, it is possible to check the transfer price against an open market price. In other cases, however, the product concerned may not be traded at all except in intra-corporate transactions. An example might be a case where a multinational company sends partly processed goods to a less developed country for one specific stage in the production process, moving them then to another country for further processing or finishing. In such cases, the most that one could do would be to show the size of the gap in transfer prices between imported and exported products which would be necessary in order for the host country to

find out whether such processing is economically profitable. Even in less extreme cases, the outcome of the analysis may well be to show that at a transfer price X, a process may be desirable for the country but that at any price above that for imported inputs or below it for exports, it would not be economically profitable.

b) Dumping prices: Dumping is a fact of life in international trade. Either because of governments' policies of subsidizing exports or because of firms' policies for utilizing excess productive capacity, it is clear that a substantial portion of world trade takes place at prices below the price of comparable products within the exporting country. It is often accepted that in such cases dumping prices cannot be used as a standard for determining the efficient pattern of resource use. International trade theory makes clear that this is not the case; a country can increase the quantity of goods and services available to it by trading in accordance with its comparative advantage, given any set of international prices, even if these prices are in no way related to production costs in other trading countries. The only qualification to this concerns a situation where prices may be changing overtime; if a firm or a country uses a dumping policy to eliminate competition in a given market, thereafter exploiting a monopoly position to raise prices, or even if the dumping results from temporary excess capacity so that after a brief period a more " normal " price would be

established, it would be incorrect to treat the dumping prices as reflecting the terms on which a country could trade a product over the life of the project. If, however, the dumping price is expected to remain unchanged over the whole life of a project under consideration, then that price reflects the effective price at which the country can trade and should be used in the analysis, the fact that it may be below the comparable price in the exporting country being irrelevant.

c) Quality differentials: This is a familiar problem in evaluating import-substitute industries that the output of such industries in LDCs may be of lower quality than a product which bears the same name coming from overseas. The result would be to overstate the true efficiency of domestic production, since it overstates the price at which a truly comparable product would be available for imports.

d) The problem of technology: The measurement of economic efficiency using the DRC methodology does not take into account the technological variations pervailing among countries at different stages of development. This is another problem that needs attention in using the c.i.f. or f.o.b. prices in computing the DRC.

In other words, the cost of imported commodities may be lower than the competing products produced domestically due to either the inital and/or rapid technological progres in relatively advanced countries. Thus, one has to look for

countries at similar stages of development or assume the absence of technological variations among countries in using the c.i.f. or f.o.b. prices in DRC calculation.

iii) Problem of Timing Costs and Benefits: One of the most fundamental differences between the static DRC calculation and alternatives, such as the UNIDO and Little and Mirrlees methods, concerns the treatment of time. For latter approaches, the timing of expenditures and benefits has a considerable influence on the evaluation of a specific project. The static DRC calculation pushes those questions aside, evaluating projects in terms of costs and benefits as of a given point in time over the economic life of a project. The problems we have discussed earlier concerning the treatment of total capital costs of a project into costs per unit of output at a given point in time results from this. There are other problems arising from the need to do this; if productive efficiency is increasing over time, either in connection with the project under consideration or in domestic firm supplying a non-traded good input to that project, then one needs to make an estimate of the average level of efficiency over the life of the project.

If the world prices of either the project's inputs or outputs are expected to change, then again one would have to estimate the average level of these prices over a number of years. However, this is not the case in alternative approaches to project evaluation so that one would not need to estimate a

single average level for those variables, although one would need to project the time pattern of both efficiency and world prices. In a nut shell the question of optimal timing of an investment cannot be as conveniently handled using the static DRC approach as it can be through methods using discounted costs and benefits.

Having described some of the conceptual and measurement problems involving the computation of DRC, we should highlight the importance and advantages of the method.

While none of the techniques of measuring economic efficiency can provide accurate results, it seems likely that the DRC approach has certain advantages over the other methods. In large part, this is because of the ease with which it can be computed and interpreted. There is danger that more sophisticated methods, while they may in principle yield more accurate results, may be more difficult to estimate and still more difficult for policy-makers to understand, with the consequent risk that in practice they may be ignored.

The other advantage of DRC method is that it places both import substitute and export projects explicitly on the same footing, analysing both in terms of their relative efficiency in dealing with the balance of payment problems. Since asymmetry in this regard is an important source of misallocation of resources in developing countries, this is an important advantage of the approach.

Since the DRC methodology compares levels of efficiency without the use of shadow exchange rate, another source of controversy and frequent misunderstanding can be removed.

from the estimates of economic profitability.

In view of the above merits the DRC approach has been commonly used in a number of developing countries. As pointed out earlier this is in large part due to the ease with which it can be computered and interpreted. One of the prominent features of the approach is that the moment one enters into shadow pricing it partakes the traits of the alternative approaches particularly that of cost-benefit method besides becoming a net concept. In this connection DRC spells out the net foreign exchange impact of a given economic entity in a much more easier way than the other methods.

DRCs can also be applied over extended periods of time. However, in Ethiopia this is difficult if not impossible mainly because information on all variables underlying the DRC model on disaggregated basis over a sufficiently longer period of time are not available, a reliable input-output table should also be available if a firm conclusion is to be made about the behaviour of DRC over time. This is a situation where the nagging problem of data availability creates a gap between the desirable and what is possible. While our knowledge of the relevant input-output coefficients is practically non-existent obtaining disaggregated data for over a period of time has not also been a simple task in Ethiopia.

Besides, the inadequancy of the financial resources have limited the study to optimal point in time.

One is then made to infer that, running DRC accross firms at a point in time can provide valuable insights and serve to identify the variation in relative efficiency among firms. Analysis of

factors underlying DRC variation can form the basis of economic restructuring. A well done DRC exercise can therefore be a powerful guide for policy making.

Finally, it has to be noted that the paucity of data has limited the depth of the analysis and the concerete conclusions reached are based on the data given and the assumptions made which presuppose that some of the conclusions could be wrong in the light of different data, years and assumptions.

3.3.3.3 Empirical Studies

A number of ex-post studies of measuring industrial efficiency in LDCs using DRC method have been published in academic literature. Among the more notable ones are Krueger (1966) for Turkish manufacturing, Stell (1972) for Ghanian manufacturing, Krueger (1975) for Indian automobil and ancillary industries, Page (1976, 1979) for Ghanian timber industries, Yagci (1984) for Turkish manufacturing industry, Ramesh Adhikari (1986) for Nepalese manufacturing industry and the World Bank (1980) and 1983) for the Zimbabwean and Ethiopian manufacturing sectors respectively.

As is frequently the case, not all the above studies have direct relevance to our study. Hence, we briefly present some of the empirical works that are believed to provide useful insights into and the practical application of the DRCs in measuring the economic performance of manufacturing industries in LDCs.

F. Yagaci in 1984 calculated the Domestic Resource cost for Turkish public and private manufacturing industries and found the existence of a considerable efficiency variation between the two. For total manufacturing at actual capacity, the DRCs in the public and private sectors were found to be 3.76 and 1.63 respectively, implying that both public and private sectors are inefficient users of the country's resources although the cost in the former is more than twice the cost of the latter.[22]

According to his estimates in the public sector, the highest DRC at actual capacity was in chemicals (-3.35), followed by wood and paper products (5.41), non-ferrous metal (3.89), iron and steel products (3.32), food (2.01), leather products (1.97) textiles (0.95), electrical machinery (0.65), and cement and glass (0.60) six out of nine sectors in the public sector showed DRCs higher than 1.25.[23]

The highest DRCs in the private sector was for iron and steel products (2.98). This is followed by non-furrous metals (3.17), rubber and plastics (1.65), wood and paper products (1.60), electrical machinery (1.40), chemicals (1.40), transport equipment (1.38), machinery (1.13), metal products (1.01), leather products (.99), textiles (.92), food (.91), cement and glass (.58) and measuring equipment (.50). Seven firms out of fourteen in the private sector had DRCs higher than 1.25 at actual capacity.[24]

At full capacity, the DRCs for total manufacturing in the public and private sectors were 2.29 and 1.37, 147 and 26 percentage points lower than the corresponding DRcs at actual capacity DRCs in all cases in both public and private sectors.

Taking the average figure for the whole manufacturing we find that Turkey has not been an efficient user of the domestic resources and an efficient producer of most manufacturing products. However, the average figure may not adequately reveal the actual situation. Thus, one has to focus on a sub-sector specific DRCs in order to have a proper image of the Turkish manufacturing industry and the country's comparative advantage and disadvantage in manufacturing a certain product by employing domestic factors of production.

In Nepal, a similar study was conducted for the year 1980 and 1981 by R.Adhikari both for public and private sector import substituting industries. The study revealed that the sugar, cement, pharmaceutical and private sector cotton textiles were economically efficient in saving foreign exchange, because all of them had DRCs of less than one in both years. In contrast, foot wear, public sector cotton textiles, and synthetic textiles were economically inefficient and incurring foreign exchange losses. These industries not only had DRCs greater than one but also a negative DRCs.[25]

Because of under capacity utilization of most Nepalese manufacturing industries, Adhikari calculated the DRC of these firms by adjusting to their hypothetical full capacity utilization, because one might expect a higher economic efficiency at full capacity operation. However, the findings of Adhikari confirm that economically inefficient firms remain inefficient, while the efficient ones can have higher levels of efficiency at full capacity level in both sectors. When we see the level of efficiency attained in public and private sector industries, we observe that the public sector firms are characterized by

a greater level of inefficiency, the underlying reasons being, according to Adhikari, the greater X-inefficiency in public than private sector firms.

Finally, the analyst concluded that since about 50 percent of output by value and 60 percent of fixed capital investment of the sample import substituting firms were found to be economically efficient in terms of domestic costs (DRC) additional investment for further import substitution and foreign exchange savings are desirable in these areas.

In Zimbabwe, a multi-sectoral study of industrial efficiency was carried out by the World Bank in 1982. The study was based on 1981 data and a sample of 122 firms and 33 products in ten manufacturing sub-sectors. These were foodstuffs, beverage, textiles, clothing and footwear, wood and furniture, paper, printing and publishing, chemical products, non-metallic mineral products, metals and metal products and transport equipment.

According to this study, the DRC estimates average 1.27 for the manufacturing sector as a whole.[26] However, as was pointed out earlier, average estimates are not very meaningful since estimates vary so greatly among the sub-sectors and products. The DRC is less than one, indicating comparative advantage in foodstuffs, beverage and tobacco products, chemical products and non-metallic mineral products. It is quite close to one for clothing and footwear, transport equipment, textiles and wood and furniture. It is considerably greater than one, indicating a comparative disadvantage, for paper, printing and publishing and metal and metal products. The DRCs ranges

from a low of 0.88 for foodstuffs and tobacco products to a high of 2.41 for metal and metal products.[27]

Ethiopia's Experience

The DRC approach for assessing the efficiency of manufacturing industries began in Ethiopia with poineering works by S. Guisinger in 1972 on tariffs and trade policies for the Ethiopian Sector. Guisinger, by taking a sample of 23 industrial enterprises, indentified a number of industries that appeared to provide very inefficient means of saving foreign exchange. According to him, even if a cut-off point of 2.0 instead of 1.0 was used, to allow for errors in the basic data, fourteen of the twenty-three industries surveyed would be rejected on the basis of their economic efficiency if they are considered as new projects.

This study was later followed by that of the Industrial Sector Mission of the World Bank in 1983. The Bank's Mission took a sample of 19 public enterprises. The result of both studies for 10 equivalent industries is given in tabular form below.

TABLE 3-1

EFFICIENCY IN MANUFACTURING: 1972 AND 1983 a/

	1972 Guisinger	1983 World Bank	Change b/
Beer	2	5	- - -
Textile c/	5 to 6	4 to 6	No change
Leather	1	1	No change
Shoe	6	3	+ + +
Soft Drinks	4	3	+
Sugar	4	2	+ +
Glass Bottle	4	6	- -
Pulp and Paper	6	6	No change
Cement	3	2	+
Iron and Steel	6	6	No change

NOTE: a/ The efficiency categories as defined depend on the DRC values.

1. Extremely efficient DRC from 0-0.40
2. Very efficient DRC from 0-41-0.75
3. Efficient DRC from 0-76-1.00
4. Marginally inefficient DRC from 1.01-1.50
5. Inefficient DRC from 1.51-2.50
6. Very inefficient DRC from 2.51-Negative value added

b/ Each plus (+) sign indicates an improvement by one 'efficiency category', the reverse is the case for each (-) sign.

c/ Four firms in the sub-sectoral sample.

SOURCE: World Bank (1985), Ethiopia: Industrial Sector Review, P. 28.

As can be seen from the table, both the absolute results and comparison overtime of the DRCs for some firms is illustrative and offers some insight into the levels and changes in the economic efficiency of the firms.

DRC calculations were also conducted by Melisachew Mesfin (1984). Melisachew computed DRCs as the ex-post measure of costs of protection among 10 manufacturing industries in Ethiopia and concluded that the country was not an efficient producer of some products. According to his findings Ethiopia was not an efficient producer of even products such as salt, edible oil and furniture with high domestic input contents.[28]

In addition, sector-specific studies of the Ethiopian Textile Industry were carried by the International Wool Secretariat in 1972.[20] According to this study DRC calculations for about 16 textile products were carried out and only 3 products out of 16 had DRC ratios of less than one. These were 36" printed poplin (0.71), 36" dyed broadcloth (0.86) and 40" dyed twill (0.80). The majority of products had DRCs greater than one indicating the comparative disadvantage for Ethiopia.

The product-specific DRCs ratios in the textile industry also ranged from 0.71 which was the lowest in 36" printed poplin to 2.89 40S 51 lb yarn.

However, the above study may not adequately reveal the actual costs and benefits to the country in promoting or sustaining the production of textile products, this is because two important factors were ignored in the study.

First, in 1972 many textile factories were operating below full capacity. Second, many factories were partly owned by

foreigners and foreign ownership results in lower net foreign exchange saving due to profit repartriation. Levels of efficiency are substantially affected by both these factors.

FOOT-NOTES

1. Stephen Nicholas (1982), "Total Factor Productivity Growth and Revision of Post - 1870 British Economic History," Economic History Review, Vol. 35, 1, P. 83.

2. Stephen Nicholas (1985), "British Economic Performance and Total Factor Productivity Growth 1870-1940." Economic History Review, Vol. 28, No. 4, P. 577.

3. Ibid, P. 579

4. C.A. Tisdell (1985), "Conceptual Issues in the Measurement of Economic and Productive Efficiency," The South African Journal of Economics, Vol, 53, No. 1, P. 48.

5. Ibid, P. 60.

6. JM. Joshi (ed), (1980), Theory of Value, Distribution, and Welfare Economics, (Vikas Publishing House Pvt. Ltd.

7. X-inefficiency implies ineffective use of inputs. It may be expressed as the ratio of incremental input cost to actual input cost, where the incremental input cost is the difference between actual and the minimum input costs.

8. E.J. Mishan (1965), Collected Papers (prepared for American Economic Associations and Royal Economic Society) Survey of Economic Theory, Vol. 1, P. 168.

9. Productivity is usually defined as the quantitative relationship between what we produce and the resource we use. Of course, there is a clear and distinct difference between production and productivity. It is possible, for example, to increase the physical quantity of output and yet decrease productivity. In seeking higher production efficiency, we are not only concerned with increasing output but with increasing output from the same or smaller use of resources.

10. Yu Guangyuang (1984), "The Key Lies in Enhancing Economic Efficiency," Chinese Economic Studies, P. 106.

11. Nurual Islam (1970), "Comparative Cost, Factor Proportions and Industrial Efficiency in Pakistan," Studies on Commercial Policy and Economic Growth, (Pakistan Institute of Development Studies, Karachi), No. 2, P. 222.

12. Ibid, P. 225

13. Niazy Walid Claude (1971), The Economics of Public Projects in Less Developed Countries: A Case Study of the Aswan Dam (Doctoral Dessertation, University of Pennsyivania), P. 6.

14. Ibid,

15. George Irvin (1984), Modern Cost Benefit Methods: An Introduction to Financial Economic and Social Appraisal of Development Project. (London, the Macmillan Press Ltd.) P. 82.

16. Michael Bruno (1972), "Domestic Resources Cost and Effective Protection: Clarification and Synthesis," Journal of Political Economy, Vol. 80, No. 1, P. 10.

17. Michael Bruno (1963, 1967, 1972), Kurueger (1966, 1972, 1975) Steel (1972), Page (1976, 1979), Person (1976), Bhagawati and Srivansan (1980), Warr (1983), Schydlowsky (1984), Yagaci (1984).

18. John Weiss (1986), "Industrial Projects and the Importance of Assumptions about Learning and Technical Change", Project Appraisal: Ways, Means and Exprience, Vol. 1, No. 3, P. 168.

19. Ibid,

20. World Bank (1982), Gudeline for Calculating Financial and Economic Returns of DFC Projects (Washington, World Bank Publication), P. 18.

21. Most of the view expressed in this section is largely based on the works of S. Guisinger and Donald C. Mead. "The Domestic Resource Cost of Foreign Exchange as a Measure of Economic Efficiency" (Addis Ababa 1972, Memo) PP. 4-25.

22. Faherettin Yarci (1984), Protection and Incentives in Turkish Manufacturing: An Evaluation of Policies and their Impact in 1981, (Washington D.C. World Bank Staff Working Paper No. 660), P. 91.

23. Ibid,

24. Ibid, PP. 92-93.

25. Ramesh Adhikari (1986), "Industrial Projects and Economic Policies. Future Lessons from Past Projects (Nepal)", Project Appraisal: Ways, Means and Exprience, Vol. 1, No. 3, P. 181.

26. Doris J. Janson (1983), Zimbabwe Government Policy and Manufacturing Sector, (Ministry of Industry and Energy Development, Harrare), P. 29.

27. S. Guisiner, (1972), "Tariff and Trade Policies for Ethiopian Sector." (Ministry of Commerce, Industry and Tourism, Addis Ababa, memo). P. 25.

28. Melisachew Mesfin (1984), Industrialization and Tariff Protection in Ethiopia (M Sc thesis, unpublished) P. 48.

29. International Wool Secretarial (World Headquarters) (1972) A Sectoral Study of the Ethiopian Textile Industry, P. 162.

CHAPTER FOUR

4.0 AN ATTEMPT AT MEASURING EFFICIENCY IN THE ETHIOPIAN CONTEXT

4.1. Introduction

Government policies affect individual industrial firms by altering the price they receive for their outputs and what they pay for their inputs. Without government policy and market distortion (monopoly, externalities) prices would reflect opportunity costs. Goods that could be exported would be priced domestically at their f.o.b. export price, since that is their opportunity cost or what they would earn if they were exported. Similarly, prices charged for goods that are imported would be the c.i.f. (landed), import price. Labour and capital would also be priced at their opportunity costs or what they would earn in their next best alternative use. These prices which operate in the absence of government policy and market distortions can be referred to as efficiency prices. Where there is government intervention or due to the structure of the economy etc. there are divergences between the private and efficiency prices.

One can measure the effects of government policies by comparing revenues and costs (and hence profitability) in private and inefficiency prices. If policies result in revenue being higher in private than inefficiency prices, these policies provide a positive incentive to a given manufacturing firm.

If, on the other hand, policies result in costs being higher in private than inefficiency prices, the policies would have a disincentive effect. The net effect of all policies can be measured by comparing profits measured inefficiency prices

with profits measured in private prices.

This comparison of revenue and costs in private and efficiency prices can provide an indication of efficiency or the comparative advantage Ethiopia has in manufacturing various products. Economic prices[2] reflect economic efficiency. If a firm that manufactures a product has positive profit measured inefficiency prices, it is by definition an efficient manufacturer of that product. Thus, as noted earlier the relative efficiency between industrial activities can be measured by calculating the DRC coefficient.

4.2. The Criterion

The first step in assessing the impact of operating government policies on the efficiency of manufacturing enterprises is the establishment of the criterion to be used in the assessment. There are several possible criteria. One could begin by considering the criterion used by most firms, i.e, the maximization of private profit. From the firm's view point, a government policy is considered beneficial if it results in an increase in its profit, it meets with disapproval if it will have a negative impact on profitability.

In order to identify the appropriate criterion to be used in assessing the effect of government policies from the national point of view, it is necessary to identify government objectives. While one can fairly safely make the simplifying assumption that the main objective of firms is to optimize profits, government objectives are usually more difficult to ascertain because of their vagueness, such as improving welfare or standard of living, and frequently conflict with one another, at least partially.

Although, government objective is not uni-dimensional, the principal and declared objective of the Ethiopian government is growth with equity. While equity refers to distributional efficiency the issue of growth dewlls upon production efficiency. The study is interested in the latter.

However, this does not mean that the Ethiopian Government is only interested in maximizing efficiency; it is also concerned with full or partial fulfilment of non-efficiency objectives such as equity, employment, self-reliance, satisfaction of merit want, political expediency, etc. The basic problem is that efficiency and non-efficiency objectives are not simultaneously fully attainable due to resource and other constraints as a result of which the Government has to choose one objective at the expense of the other. This is known as trade-offs among objectives, which is not the primary focus of this study.

The study rather attempts to focus on areas that deserve the attention of policy makers. Policy makers by choosing a mix of policy instruments at their disposal can designate more clearly the required trade-offs that would result in a minimum sacrifice in efficiency in order to achieve satisfactory progress and for attaining other objectives. Thus, in this study, it is assumed that, among the multiple objectives of the Ethiopian Government, the attainment of economic efficiency is the principal objective.

In assessing the impact of government policies on the manufacturing sector economic efficiency thus becomes the basic criterion, because policies that are effective in maximizing economic efficiency will also result in meeting other government objectives.

4.3. Method of Analysis[3]

The general formulation of the methodology is based on the concept of Domestic Resource Cost. The DRC concept as pointed out before relates to a measure of opportunity cost in terms of total domestic resources of producing or saving a net marginal unit of foreign exchange.

The DRC efficiency analysis can perhaps be explained clearly with the help of Table 4.1. This Table presents a straight forward accounting matrix that consists of four columns and three rows. The first identity measures profits as the difference between receipts and costs, where the cost items include both purchased inputs and domestic factors. The profit measure can either be in private or efficiency prices.

Private profitability is calculated as the residual when all actual market costs of input-materials and factors are subtracted from the market value of outputs. In Table 4.1 the calculation of private profitability (R) is presented in the top row: revenue (O) less input costs made up of traded goods (P) and non-traded goods (Q) yield profit (R), with all entries given in private prices (R = O-P-Q).

TABLE 4-1

DRC EFFICIENCY ANALYSIS

	Revenue	C O S T		Profit
		Traded Inputs	Domestic Factors	
Private Prices	O	P	Q	R
Efficiency Prices	S	T	U	V
Effect of Policy and Market Distortion	W	X	Y	Z

Where: R = Private Profitability, O-P-Q = R

V = Economic Profitability, S-T-U=V

W = Transfer, O-S=W

X = Input Transfer, T-P=X

Y = Factor Transfer, U-Q=¥

Z = Net Transfer, R-V=Z as well as W+X+Y=Z

The second fundamental accounting identity in efficiency analysis is that the difference between the revenue, costs or profit in private prices and in efficiency prices measures the effect of policy. This difference can also include the effects of market distortions, which prevents product or factor markets from allocating outputs or inputs efficiently. The key to understanding this second relationship lies in the definition of efficiency prices and thus in the meaning of economic profitability, because the evaluation of profit in economic terms requires measures of outputs and inputs (and hence profits) in prices that represent underlying scarcity value or opportunity costs. "Efficiency prices, if reflected in actual decisions, would result in optimal allocation of scarce resources and thereby generate the highest national income."[4]

For commodities that are traded internationally, the appropriate efficiency prices are the world prices, the c.i.f. import prices for imports and the f.o.b. prices for exports.

In such analysis, considering the border price as a measure of efficiency price is crucial to the whole analysis and the conclusion to be arrived at. Although, the world price itself is a distorted one, it can serve as an image of efficiency price. Border prices are thus considered as an appropriate measure of apportunity costs since the government always has the choice of importing to meet domestic demand at a cost to the economy of the foreign exchange needed to buy those imports or exporting to earn foreign exchange. Inputs needed for domestic production also can either be imported or domestically produced. Hence, the border price is the appropriate standard for valuing the costs of all traded commodities. The economic value of an additional domestic output is, therefore, the foreign exchange saved by reducing imports or earned by expanding exports.

For example, the c.i.f. import price is a correct measure of the economic return for each unit of output produced by an import-substituting activity. If one additional ton of domestic production of paper is under consideration, its economic value to Ethiopia is given by the import cost that the country would otherwise incur if it had to import the paper. Likewise, the c.i.f. import price of bottle glass provides an economic evaluation for additional output of locally produced bottles used in the domestic production of beverages, hence traded inputs are valued in the same manner as traded outputs.

Two other kinds of inputs require different treatment, however, because no world price is available to serve as a benchmark for economic valuation. Domestic factors of production -- land, labour, and capital--are evaluated with respect to their opportunity costs which means that for each of these input amount of national income foregone by removing it from the next best alternative activity in which it is used. The idea is that scarce factors provide valuable services in production; the opportunity cost of each factor is a measure of that scarcity because it shows the cost to the nation of utilizing the factor in one activity than in another. In addition, non-traded inputs, such as power, water, civil construction, local transportation, many other services and commodities with very high international transportation costs, cannot be evaluated by making world price comparisons, because non-traded goods for reasons that relate to physical characteristics, cost, or trade policy do not enter into international commerce. More precisely, "these goods are sometimes defined as those whose production as outputs, or use as inputs have a direct effect on the domestic economy rather than on the balance of payment."[5] These arise from the fact that commodities can be non-traded internationally, not simply because of their physical characteristics, but also due to government's trade policy restrictions. A commodity that is internationally traded in a relatively open economy may be non-traded in autarchic or fully closed system.

Nevertheless, conventionally non-traded goods can be evaluated by using appropriate conversion factors which are a reasonable approximation and quantification of the distortion in the

domestic market as compared to the world market.

The calculation of economic profitability follows easily once the revenue and costs have been evaluated in efficiency prices. With reference to symbols in Table 4-1 the efficiency prices of output (S) and of traded inputs (T) are given by c.i.f. import or f.o.b. export prices, the efficiency prices of factors (U) are their opportunity costs, and the economic profit (V) is the difference between revenues and costs in efficiency prices (V=S-T-U). If economic profit is positive, the activity is competitive at world prices and thereby is an efficient user of scarce resources and a positive contributor to national income.

An economic activity can only save or earn foreign exchange if it is economically profitable, because this efficiency measure is an indicator of the ability of an economic activity to use domestic resources (U) to generate foreign exchange (S-T). So long as domestic factors are scarce their costs need to be included in evaluating foreign exchange effects. The net actual foreign exchange saving is therefore, (V=S-T-U), which is the measure of economic profitability. If an activity is efficient, it will save or earn foreign exchage, if it is inefficient, its operation cannot have beneficial foreign exchange impacts. In this context, positive economic profit is an indication of comparative advantage or the ability to compete in international trade efficiently.

4.4. Effects of the Policy Environment

There is a close relationship between the calculation of economic profitability and measurement of the effect of policy as shown in the third row of Table 4-1.

Divergence between economic profitability and private profitability can result from market distortions as well as from government intervension through its macroeconomic and microeconomic policies. One can argue that to a considerable extent whatever market distortions there may be these are the result of government policy. Unless the government enacts a protection policy, for example, each importable output and input will be available at its c.i.f. import price, which will in turn become the domestic price, so that O will equal S and P will be the same as T in Table 4-1. Consequently, any difference between O and S or between P and T is caused by some combination of trade restriction, price control, tax/subsidy. If O exceeds S, either consumers are forced to pay higher than world prices or the government treasury is directly subsidizing production, causing an output (income) transfer W equals (O-S). Similarly, if P is less than T,traded inputs are subsidized, resulting in an input transfer (X) or (T-P). For domestic factors, the transfer (Y) amount to (U-Q).

The economic prices of traded output (S) and of traded inputs (T) are established internationally since Ethiopia has no market power with respect to manufactured commodities. Neither commodity nor macro-economic policies in Ethiopia, therefore, have significant effects on world prices and hence on economic valuations of traded commodities.

The economic prices of domestic factors (U) are given by determinations of opportunity costs, which are reflective of underlying supply and demand conditions in domestic factor markets. For any given year, these economic prices are largely immutable by macro-economic policies. The government can, however, enact tax or subsidy policies on one or more of the factors (capital, labour, or land) which create a divergence between private cost (Q) and economic costs (U), resulting in a subsidy to the uses of the factor if Y, which is U-Q, is positive or a tax if the difference is negative.

4.5. Efficiency Analysis

Collection of data for six variable composed of private, and economic revenues and costs (O,P,Q,S,T, and U) permits calculation of private profitability (R), social profitability (V), net transfer (Z), and output, input, and factor transfers (W,X and Y). Efficiency analysis thus requires measurement of private profitability and efficiency on the basis of the magnitude of R and V respectively. If R and V are positive it is indicative of private profitability and efficiency. It also measures the effect of commodity and macroeconomic policies such as subsidy/tax on private profitability. As indicated earlier the economic valuations of traded goods (S and T) are unaffected by Ethiopian government policy, the economic costs of domestic factors (U) are influenced by macroeconomic decisions but only in the long-run, and hence economic profitability (V=S-T-U) is not affected by policy choices except in the long-run when relative efficiency costs of factors can shift with economic growth. Commodity policy in the manufacturing sector

in general and that of textile industry does not influence world prices or economic profits, at least in the short-run.

In a single year or over time, the combination of various policies can cause actual market prices (private prices) of traded outputs and inputs to diverge from world prices in either direction. Factor price policy, including credit subsidies or rationing, minimum wage laws, etc., can cause private factor costs to exceed or fall short of comparable opportunity costs. Consequently, private profitability can be greater than, less than, or equal to economic profitability depending on whether the net effects of commodity and macroeconomic policy are subsidizing (protective), taxing or neutral.

4.6. Ratios

The information in Table 4-1 are sufficient to analyze a single manufacturing establishment or to compare two or more firms that produce the same commodity. But no precise meaning can be attached to a comparison between firms producing different outputs. Hence, the calculation of certain ratios is necessary to standardize the comparisons.

Three useful ratios are developed where the symbols are drawn from Table 4-1 and given as follows.

1. Nominal protection coefficient = NPC = $\frac{O}{S}$

2. Effective protection coefficient = EPC = $(O-P)/(S-T)$

3. Domestic resource cost ratio = $\frac{U}{(S - T)}$

The Nominal Protection Coefficient (NPC) is the ratio of the firm's revenue in private prices to efficiency prices. The NPC reflects the degree of protection received by a firm on its output. NPC coefficient greater than one indicates that the firm is receiving positive protection on output, whereas the opposit might be true if NPC is less than one indicating disprotection.

The second ratio, the Effective Protection Coefficient (EPC) takes into account not only the effect of policy on revenue from sales but also the effects of policy on inputs to production. It is the ratio of value added in private price to value added in efficiency prices. Variations between private and economic costs of traded inputs occur when government enacts certain policies, such as taxes, customs duties, prices control or a requirement to purchase a good locally.

A value for the EPC greater than one indicates that the firm is receiving a net positive incentive on the combination of policies influencing the purchase of material inputs and sales of output. Similarly, an EPC value less than one but positive indicates that the firm is receiving a net disincentive. A firm can have an NPC greater than one and EPC less than one if the disincentivies on inputs to production are greater than the incentives or protection on sales. However, EPC is a limited indicator of incentives because, it does not account for the effect of policies on domestic factors of production i.e. land, labour and capital.

The Domestic Resource Cost (DRC) ratio is the ratio of domestic factor cost in efficiency price (U) to value added in efficiency prices (S-T). Because the DRC ratio includes domestic factor costs, it measures not only policy effect on traded inputs and outputs, but also the opportunity costs of using domestic factors in production and can therefore serve as a measure of comparative advantage. The costs of domestic factors are essential in determining economic profitability, as shown in the accounting profitability (V in the matrix) to be compared across firms or products. As pointed out earlier a DRC less than one indicates the particular activity is economically profitable, in the absence of government policy, this activity would produce more than enough value added to remunerate labour and reimburse capital. In other words, it indicates that Ethiopia is an efficient producer of a given product because the domestic factor costs (U) incurred in its production are less than the direct foreign exchange earnings or savings (S-T).

4.7 Basic Assumptions

1. One of the prominent assumptions of the DRC model is that in the absence of market failure and government policy intervensions, private and economic receipts, private and economic costs of a given activity are always equal. In this study, however, government policy intervension is assumed to be a major cause of distortion that brought variation between private and economic receipts and costs both in product and factor markets. Because, unless the government enacts a protectionist policy,

each importable output and input will be available at its c.i.f. import price which will in turn become the domestic price.

2. In countries where there is a scarcity of skilled labour force at the prevailing market wage, it is normally assumed that output foregone in an alternative employment either equals or exceeds the market wage. In Ethiopia estimating the shadow prices of labour is difficult. The Development Project Study Agency (DPSA) which is the state planning organ, produced a document called National Economic Parameter. In the document, the shadow price of skilled labour is taken as equivalent to the market wage i.e. the skilled labour conversion factor to be 1. This assumption has been used in the study, of course, with little qualification i.e. the above conversion factor or shadow price of labour is further multiplied by Average Conversion Factor (ACF) of 0.75 in order to determine the economic value at world price. In the final analysis, the economic price to be used in costing hired skilled labour in Ethiopia is assumed to be 0.75 of the market wage.

3. It is often assumed that the economic cost of employing an unskilled labour in a developing economy is significantly below the market wage the worker is actually paid, so that the unskilled labour conversion factor is less than one. This is so because the market wage exceeds output foregone in an alternative employment which is the conventional assumption for a labour surplus economy, that is the market wage rate is greater than the output foregone in

worker's alternative employment at domestic prices. DPSA has provided that the economic price used in costing unskilled labour to be half of the market wage. Thus, 0.50 is assumed to be the unskilled labour conversion factor and used in this study.

4. The economic return to capital in Ethiopia is assumed to be 0.10. This is the discount rate given by the state planning organ as a National Economic Parameter and it is also the rate used by government and other international institutions in their economic analysis of investment in Ethiopia.

5. The economic price for minor locally procurred items and non-traded inputs is assumed to be less than one. Hence, in this study an ACF of 0.75 is used in converting the values in the private market price into economic values.

FOOT-NOTES

1. Private prices in this study refer to the actual or observed market prices.

2. Throughout this analysis the words "economic price" and "efficiency price" are used interchangeably.

3. This method of analysis was origninally developed by Professor Scott R. Pearson and has commonly been used by the World Bank in appraising the efficiency of manufacturing industries in less developed countires.

4. Scott R. Pearson (1987) Portugese Agriculture in Transition (unpublished) Stanford University, Stanford P. 22.

5. John Weiss (1987) " Approaches to Estimating National Economic Parameters: Jamaica, Nepal and Ethiopia" Project Appraisal Beech Tree Publishing, England, P. 22.

CHAPTER FIVE

5.0 ANALYSIS AND IMPLICATION

5.1 Guidelines for Analysis

5.1.1 Indicators of Protection

While each of the policies discussed earlier may influence the economic efficiency of the firms, it is essential to measure their aggregate impact on the industry.

Industrial protection in the form of Tariffs, indirect taxes, subsidies, quantitative restrictions, price controls, the exchange rate, etc., have a combined effect on the level of protection accorded to a given industry. The degree of protection accorded to a given industry on its output can be measured by the Nominal Protection Coefficient (NPC). This is expressed in the model by ratio of O/S i.e. the firms output measured at domestic market prices over economic value of the output at efficiency prices. NPC greater than one indicates that the firm is receiving positive protection on output, where as an NPC less than one indicates that the firm faced a negative protection.

It is important, however, to run the Effective Protection Coefficient (EPC), because EPC is superior to NPC measure in that it measures the effects of policy both on the output and inputs of the firm by the ratio of value added i.e. revenue from sales of traded output minus the cost of traded inputs in domestic market price to value added in efficiency prices.

Furthermore, it should be noted that effective protection in this study has a wider connotation as opposed to the narrow

definition of tariff protection and includes all sorts of protection offered to a given venture by various commercial and other micro-economic policies and the incentive schemes within the firm.

In the model EPC is given by the ratio of output in private prices less value of traded inputs in private prices to the value of output in efficiency prices less cost of traded inputs also measured in efficiency price i.e. (O-P)/(S-T). This ratio as pointed out above can be affected not only by policy measures but also by factor internal to the firm such as labour productivity, variation of machine technology (Annex V) and the general working environment.

A value for the EPC greater than one indicates that the firm received positive protection as a result of the combination of policies affecting both the inputs and outputs. Conversely, a positive value of EPC less than one indicates that the firm is receiving a negative protection or disincentive. Moreover, effective protection with negative coefficient indicates that the firm is reciving exceptionally or infinitely large positive protection.

5.1.2 Indicator of Comparative Advantage

The incentive coefficients we discussed in the preceding section (NPC and EPC) measure the level of incentives given to a firm or an industry. The DRC, on the other hand, is a measure of costs and benefits from a national point of view and we use it to estimate the economic cost in units of foreign exchange of keeping a given venture alive by taking the value at shadow prices of the primary factors devoted to it or represents

the value of domestic resources expended in saving or earning a unit of foreign exchange. Thus, it throws some light on the comparative advantage or efficiency of the economic activity and represented in the model by U/S-T i.e. it is the ratio of domestic factor cost in economic prices to value added in economic prices. It measures not only the impact of government policies on traded inputs and outputs but the opportunity costs of using domestic factors of production.

In a world with perfect knowledge and an equilibrium exchange rate the correct DRC cut-off point between efficient and inefficient firms would be 1:1. An economic activity with requires or consumes more than one unit worth of foreign exchange would consitute a misuse of resource. Following this line of argument an activity with a DRC less than one indicates the relative economic efficiency and a DRC higher than one indicates the comparative disadvantage or inefficiency. Besides, a negative DRC value implies a net foreign exchange loss to the economy, since DRC is negative where the value added at economic price is negative.

Nevertheless, in this study a DRC of 1.5 rather than 1.0, was used to divide efficient from inefficient firms to allow for the absence of perfect knowledge and equilibrium exchange rate.

5.2. Empirical Results

On the basis of the data at the level of firm and other related information, and the methodology discussed in the previous section the value of NPC, EPC and DRC was estimated for state-owned textile firms. Additionally, DRC was also computed for 8 major products produced by these firms.

5.2.1 Efficiency of the Textile Industry

The incentive indicators both nominal and effective protection coefficients for the state-owned textile industries as a group is estimated at 208 and 511 percent respectively. This implies the textile industries as a whole enjoyed a positive output protection of 108 percent and an effective protection of 411 percent.

The weighted average DRC for the textile sector is also found to be 1.97 percent. This implies that on the average, the cost of domestic resources in the state owned textile industries exceeds the world value added created by these industries by 47 percent.

5.2.1.1 Comparison with other Studies

When we compare our empirical results with similar studies conducted by various persons at different periods and different places, we find variations between our finding and these other studies. As indicated earlier in chapter 3 Yagei has calculated DRC for Turkish Public Sector Textile Industries and according to his estimate the DRCs for the public sector textile industries was 0.95. Compared to Ethiopia it can be said that the Public Sector Textile Industry in Turky is more efficient, implying textile production in public sector industries in Ethiopia on average costing more than twice than that in Turky.

The variation in the level of efficiency attained in two countries and the relatively efficient position of Turky is ascribed among other things mainly to Turkish government

industrial promotion policy. The government of Turky provides generous industrial incentives. This system includes tax allowance, interest subsidies, export tax rebetes, duty free importation, tariffs, quantitative restrictions as well as foreign exchange and credit priorities. These incentives, combined with rapid expansion in domestic demand provide the basis for efficient production of textile articles by Turkish public sector industries.

A similar study was also carried out by Adhikari in Nepal for the years 1980 and 1981. According to his estimates, the Nepalese Public Sector Textile Industries were economically inefficient and incurring foreign exchange losses. The textile industries in Nepal not only have a calculated DRCs greater than one but also have a negative DRCs i.e. (-0.85) in 1980 and (-7.66) in 1981. According to the writer the unncessarily high effective protection provided to these industries appeared to be a major cause of economic inefficiency and losses and has contributed much to relax their cost-reducing effort. As compared to Nepal, production of textile products by public firms in Ethiopia is comparatively efficient.

The study conducted by the World Bank Mission in Zimbabwe in 1982 provides a DRC of 1.28 for the textile and clothing sub-sector. This places Zimbabwe in a better position as compared to Ethiopia. The existance of a difference in efficiency between Ethiopia and Zimbabwe is due to the obvious differences between the two countries in terms of geography, general economic policy and institutional superstructure.

In 1983, the World Bank Mission calculated DRC for a sample of 3 textile firms and found an average of 1.70 for the firms. This indicates that our emprical finding is consistent with that of the World Bank although the magnitude slightly differs.

From the foregoing analysis of industrial efficiency it can be concluded that on average the state owned textile firms in Ethiopia are inefficient when we consider the absolute results. The average estimate however, is not as interesting since the estimates very greately among the 15 firms studies. Hence, the focus of our attention would be on intra-firm analysis.

Table 5-1 depicts estimates of the incentive indicators and DRCs for each of the 15 textile firms in the survey.

TABLE 5-1

STRUCTURE OF PROTECTION AND EFFECIENCY OF THE STATE OWNED TEXTILE INDUSTRIES

Sr. No.	Industry	NPC	EPC	DRC
1	Asmara Textile Mill	2.08	0.15	0.65
2	Debre Birhan Wool Factory	2.08	2.36	0.78
3	Addis (Augusta) Garment Factory	2.08	3.42	0.82
4	Asmara Sack Factory	2.08	3.22	1.19
5	Bahir Dar Textile Mill	2.08	3.68	1.38
6	Adey Abeba Yarn Factory	2.08	3.35	2.46
7	Ethiopian Thread Factory	2.08	6.73	2.94
8	Akaki Textile Mill	2.08	5.50	2.71
9	Dire Dawa Textile Factory	2.08	6.73	2.94
10	Meher Fibre Factory	2.08	5.41	3.29
11	Fibre Factory of Ethiopia	2.08	6.31	4.19
12	Progress (Idget) Cotton Factory	2.08	13.51	7.75
13	Akaki Garment Factory	2.08	-8.43	-8.81
14	Asmara Sweater Factory	2.08	-4.52	-4.43
15	Eritrean Textile Industry	2.08	-15.40	-7.62

SOURCE:- Computed by the Author from the Data Collected on 15 Textile Industries. See Annex III which Summarizes the Data.

5.3 Intra-Firm Analysis

5.3.1 Incentive Indicators

The nominal protection we have discussed in the previous section expresses the effects of the protective measures on the prices of a products received by its domestic producer. Effective protection on the other hand indicates the combined effect of output and input protection of the processing activity. It is a measure of the protection of value added and is superior to nominal protection in describing the structure of protection.

From the results presented in Table 5-1, certain features of the structure of protection become apprent. The Ethiopian system of industrial incentive provided a uniform nominal protection i.e. NPC of 208 percent for firms under the National Textile Corporation. The uniform nominal protection accorded to textile industries is largely explained by the fact that the country's commercial policy affords non-discriminatory tariffs to the textile factories.

As opposed to this the evidence gathered on the textile firms, however, suggests that the level of effective protection varied significantly across firms and fluctuates from the exclusively high rate of -15.40 to 0.15 which imply an 85 percent point disprotection.

As pointed our above, the dispersion of EPCs over firms is very wide. The highest is in Eritrean Textile Industry (-15.40) indicating a negative world value added followed by Akaki Garment Factory (-8.43), Asmara Sweater Factory (-4.52), Progress Cotton Factory (13.51), Ethiopian Thread Factory

(7.69), Dire Dawa Textile Factory (6.73), Fibre Factory of Ethiopia (6.31), Akaki Textile Mill (5.50), Meher Fibre Factory (5.41), Bahir Dar Textile Mill (3.68), Addis Garment Factory (3.42), Adey Abeba Yarn Factory (3.35), Asmara Sack Factory (3.22), Debre Berhan Wool Facgory (2.36) and Asmara Textile Mill (0.15). Only the last firm faces disprotection of value added. The disprotection of value added is among other things due to the government price control.

Furthermore, the results indicate that the structure of protection in the textile sector is such that many inefficient firms have a good chance of being financially profitable. The inverse relationship between financial profitability and economic efficiency (Annex III) suggests that, about 60 percent of the firms that are net contributors to the government budget were utilizing scarce resource inefficiently.

5.3.2. Efficiency Indicator

The most obvious features of the measured levels of efficiency is their wide variation. As can be seen from Table 5-1, the highest DRC is observed in the Eritrean Textile Industry (-7.62, indicating negative value added), followed by Asmara Sweater Factory (-4.43), Akaki Garment (-0.81), Idget Cotton Factory (7.75), Fibre Factory of Ethiopia (4.19), Meher Fibre Factory (3.20), Dire Dawa Textile Factory (2.94), Akaki Textile Mill (2.71), Ethiopian Thread Factory (2.56), Adey Abeba Yarn Factory (2.46), Bahir Dar Textile Mill (1.38), Asmara Sack Factory (1.19), Addis (Augusta) Garment Factory (0.82), Debre Birhan Wool Factory (0.78) and Asmara Textile Mill (0.65).

As can be seen from the above descending order ranking in Table 5-1, we observe 3 behaviours of textile firms i.e. those which have a positive DRC less than 1.5 and the efficient category, those having a positive DRC greater than 1.5 and relatively inefficient and in the third category we find those textile industries which have a negative DRCs and ver[illegible] inefficient.

In the first category we find 5 firms, namely, Asmara Textile Mill, Debre Berhan Wool Factory, Addis Garment Factory, Asmara Sack Factory and Bahir Dar Textile Mill. In the second category we find Adey Abeba Yarn Factory, Ethiopian Thread Factory, Akaki Textile Mill, Dire Dawa Textile Factory, Meher Fibre Factory, Fibre Factory of Ethiopia, progress (Idget) Cotton Factory.

In the third category we have Akaki Garment Factory, Asmara Sweater Factory and Eritrean Textile Industry. These three industries have been absolutely inefficient and have brought a net foreign exchange loss to the economy, since DRC is negative where the international value added to these activities is negative, meaning that the value of traded inputs exceed the international value of the goods produced. In this case, the net benefit of saving a unit of foreign exchange is negative, i.e. the DRC is infinitely large.

Table 5-1 also depicts the existence of significant variations both in the level of protection (EPC) and the degree of efficiency across the firms. The environment under which these firms have been operating is responsible for the variation of both the level of protection and the relative efficiency of each firm. The state owned textile industries as a whole have been enjoying

high protection on output i.e. they receive a uniform nominal protection of 208 percent. Conversely, the EPC in the state owned textile firms varies from a high of -15.4 to a low of 0.15.

5.4 Relationship Between Protection and Efficiency

The need for protectionist policies in LDCs is often justified on the ground of potential comparative advantage in industries where the learning process and/or the economic of scale in production are deemed important enough. This implies giving incentives to infant industries which are expected to have a comparative advantage in the future. The very clear implication that emerged from the study suggests, however, that the protected industries in the state-owned textile sector have not become efficient in Ethiopia.

As evidenced by the emprical finding among the 14 firms that were protected, 9 were inefficient. Moreover, within the firms that were positively protected those that have been highly protected are absolutely inefficient.

To explain the relationship between the indicator of incentive (EPC) and economic efficiency (DRC) Spearman's rank correlation coefficient r with 15 number of observations has been calculated by the formula

$$r = 1 - \frac{6\Sigma d^2}{n(n^2-1)}$$

where n- refers to the number of observations

d-the difference between ranks by effective rate of protection and economic efficiency for individual firms.

According to our estimate, the value of the coefficient found to be (-0.93) which express a strong negative correlation between protection and efficiency.

Thus, the available evidence does not support the notion that protectionist policies have been effective in exploiting the potential comparative advantage. If anything, the contrary might be the case and consistent with the a priori expectation that the higher the effective protection the lower the economic efficiency.

5.5. Factors Affecting the Efficiency of Firms

The available evidence suggests that there is significant inefficiencies in the state owned textile industries. The existence of inefficiency or the variation in the level of efficiency among firms is partly ascribed to the operation of the current government policies and partly attributed to the internal problem of each firm. As indicated earlier there are three categories of firms, viz., those efficient, inefficient and those absolutely inefficient.

It is clear that there are a number of reasons as to why some firms are efficient while others are either inefficient or absolutely inefficient. For the purpose of this study we consider selected efficient and absolutely inefficient firms to provide an explanation for their performances, while we are doing this we also identify some common factors that affect the performance of the textile firms as a whole. Because, it is worth noting that the great majority of the state-owned textile firms in Ethiopia have been constrained by and are sharing common problems.

5.5.1 Efficient Industries

Among the firms in this category, Asmara Textile Mill is found to be the most efficient. The underlying reason for this is that the factory is well diversified. The factory had owned a cotton farm (Ali Gider) which supplied it with cotton. Its income was further boosted from its agricultural activity.

The Debre Berhan Wool Factory was found to be the second most efficient. This is due, among other things, to the modernization effort that was made in 1979. The factory was reinnovated with the installation of 5 additional machines which increased its efficiency. Besides, the factory has a natural or geographical advantage of procuring its raw material from the surrounding areas.

The firms in this category are also the ones which had the highest labour productivity measured in terms of value added in economic prices per worker (see Annex VI).

5.5.2 Absolutely Inefficient Firms

a) Eritrean Textile Industry

The factors that contributed to the inefficiency of the Eritrean Textile Industry are many and intimately related to both government policies and internal characteristics of the firm and are enumerated as follows:

1. The industry received exclusively high protection. The EPC for the firm was (-15.40) which is the highest in the textile industry.

2. The productivity of labour had also been the lowest in the textile sector.
3. Lack of proper service from some government institutions particularly the service of Maritime and Transit Service Corporation (MTSC). According to the report of the factory there has been a communication gap between the factory and MTSC. MTSC consistently failed in providing information when the factory's raw materials and other inputs reached the port of Asseb or Massawa.

   In consequence the factory has been expriencing shortages of raw materials. This resulted in a decrease of output and efficiency.
4. In 1980 there had been a work sabotage on the part of senior workers.
5. The factory was also exposed to fire damages in 1980. Within a period of one year, four fire accidents took place.
6. The factory has been characterized by a production of limited products and had no chance of compensating the loss of revenue incurred in one product by the gain of others. All these factors combined adversely affected the economic performance of the factory and places the Eritrean Textile Industry in the most inefficient position.

b) Asmara Sweater Factory

This is the second most inefficient firm that has been found among the state owned textile industries in Ethiopia. The underlying reasons for this are given as follows:

1. The factory has been characterized by high labour

turnover and frequent absenteeism. This situation errod-ed the efficiency base of the factory.

2. The labour productivity was also one of the lowest in the textile industries of Ethiopia.
3. The factory heavily depends on the imported raw materials to the extent of 98 percent. The balance of payment problem during that year accentuated by the higher price of oil made the acquisition of the raw materials difficult.
4. Problem of marketing: The factory faces marketing problems due to lack of fashion change. The sweaters produced by this factory are no longer in fashion. As a consequence the factory failed to compete with small scale sweater factories whose output is in fashion. The factory's marketing problem is further accentuated by lack of coordination between the factory and the sole public marketing agency i.e. the Ethiopian Domestic Distribution Corporation (EDDC). The factory has been obliged to produce in accordance with the marketing information to be provided by the EDDC. However, EDDC, has not been prompt enough in providing the necessary marketing information as to which product or products are in market demand. As a result of this, the factory's out-put produced without the knowledge of the market were unable to be sold. Owing to this, the factory faced a financial difficulty which began the circle of [illegible] inefficiency.
5. The factory had also a heavy interest rate burden for the fund borrowed from the banks. This adds up to its financial cost and inefficiency.

c) Akaki Garment Factory

This is the third most inefficient textile industry in the country. The factory, among other things, has had the following specific problems that jeopardize its efficiency:

1. Low labour productivity: The factory had one of the lowest record of labour productivity.
2. Specialization - The Akaki Garment Factory is specialized in the production of military uniforms. In 1980, about 95 percent of the factory's productive capacity was allocated to the production of military uniforms. This is the single most importance factor that affected the efficient performance of the firm negatively. The bad side of this production pattern is that the payment to the factory is usually made by the Ministry of Defence. In principle, the procedure is not bad, but it has been reported that the Ministry of Finance had not been in a position to make such a payment timely for an unknown reason.

All these factors combined to contribute to the inefficiency of the Akaki Garment Factory. This situation adversely affects both the financial position and the economic performance of the factory. It has been reported that the shortage of cash to pay for raw materials and other services is not uncommon to the factory.

3. The factory usually utilizes the bank overdrafts facility as a source of working capital to run its operation. This being a financial cost in the form of interest, contributes negatively to the efficiency of the firm.

4. The factory has also been characterized by redundant labour force. In 1979 the factory employed 400 additional workers with the intention to increase the factory's capacity from 2 shifts to 3 shifts. However, later the plan of the factory was cancelled whereas the additional labour force remains as part of the factory employee. Thus, the factory is loaded with unnecessary labour force. This situation besides creating a redundency increase on the factory's cost and reduces its efficiency.
5. The lack of responsiveness of selling prices to changes in cost of raw materials and other production costs has led to a bad financial standing of the factory and to a loss of efficiency.

5.5.3 Common Problems

Although the degree of the problems that influence the efficiency vary from industry to industry, the State owned textile industries in Ethiopia have the following common problems.

1. Period shortage of imported and domestic raw materials.
2. Shortage of skilled manpower in many job categories mainly because, many quits and frequent absenteeism particularly in Dire Dawa, Meher Fibre Factory and Adey Abeba Yarn Factory due to low payment and absence of incentives relative to the hard working conditions. Those who quit the industry were usually those who were well exprienced and not easily substitutable. The factories usually try to replace the vacant places by training new workers but as this requires time, it decreases productivity and increases cost.

3. Shortage and interuption of electric power mainly in Asmara, Dire Dawa and Bahir Dar regions.
4. Obsolecence of much of production machinery and lack of spare parts leading to loss of output and efficiency, specially, in factories like Idget where the machines are too old and frequently breakdown.
5. Lack of responsiveness of selling prices to changes in prices of raw materials and other production costs. This, not only adversely affects the financial standing of many factories, but also negatively affects their efficiency.
6. Lack of coordination between the EDDC and the factories. As a result, there is consistent communication gap in regard to the marketing information between the factories and EDDC.
7. The great majority of firms in State owned textile industry in Ethiopia face financial difficulties. This is mainly due to the high level of cash required of them by the government in the form of income tax, capital charge and residual surplus.
8. Shortages of transport facilities and bottlenecks in distribution of raw materials leading to losses of production.
9. The cut-back in foreign exchange allocations required by deteriorating balance of payments situation is one of the common problems that contributes to the poor performance of some industries.
10. The efficiency of the firms appears to be partly hampered by the fact that many of the relevant decisions regarding hiring, incentive schemes, authority to procure inputs,

and investments are taken outside the firms.

11. X-inefficiency: The textile industries have also been characterized by greater x-inefficiency. They face bureaucratic interference and operate in line with the annual plan often with little regard to cost and efficiency. This has led to greater inefficiency.
12. Shortage of water: The shortage of water is the common phenomenon in Asmara region. Consequently, the factories in Asmara region usually suffer from water problem. In 1980, most of the factories in this region depended heavily on purchased water from private sectors which cost them Birr 2.73/M.

5.6 Product Specific

We have examined the economic efficiency of the state owned textile industries. We now propose to look at the efficiency of industry rather from a different angle using the same method. This is to see whether Ethiopia has a comparative advantage in producing certain textile products or to indicate the relative advantage for the country of persuing particular lines of activity by taking into account the domestic resources used to save or earn a unit of foreign exchange. Table 5-2 presents a summary results of the DRCs estimates for the eight products.

TABLE 5-2

PRODUCT SPECIFIC EFFICIENCY ANALYSIS

Sr. No.	Name of Product	DRC
1	Woolen Blanket	0.76
2	Sacks	0.91
3	Hosiery	2.32
4	Dyed Fabrics	3.14
5	Carpets	5.26
6	Grey Fabrics	7.22
7	Twine	-1.96
8	Acrylic Yarn	-7.11

SOURCE:- Computed by the Author from the Data Collected on the Firm Level See Annex IV for the Summary of the Data.

When we examine the product specific ratios we see that we have only two products with ratios less than 1.5, indicating that it is worthwhile interms of foreign exchange saved in relation to domestic resource used for Ethiopia to produce these textile products at home. However, the great majority of the products (6 out of 8) have DRC ratios greater than 1.5 indicating the relative economic inefficiency in producing these products. This result confirms those obtained by the International Wool Secretariate that calculated the DRC for 16 products of which they found a value of less than one for 3 similar products and more than one for the other 13. Their calculation ranged in value from 0.71 to 2.89.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The main conclusion arising from this study is that the economic efficiency of the state owned textile industries differ very greately across firms. As Table 5-1 shows, the protection rates (EPC) and the efficiency indicator (DRC) differ considerably among firms.

More specifically the Ethiopian system of protection has encouraged and supported, a number of inefficient firms, when efficiency is judged by the value of domestic resources needed to save or earn a unit of foreign exchange. Firms with high domestic resource cost are afforded high level of protection while firms with low domestic resource cost are accorded only relatively low levels of protection.

Industries which appear to be efficient include Asmara Textile Mill, Debre Berhan Wool Factory, Addis (Augusta) Garment Factory, Asmara Sack Factory and Bahir Dar Textile Mill while the remaining 10 industries appear to be inefficient.

Textile products for which Ethiopia appears to be an efficient producer include only woolen blanket and sacks. On the basis of the DRC ratios, then, we should conclude that the production of these 2 out of 8 products should be continued even expanded, but Ethiopia should cease the manufacturing of the remaining 6 products as far as economic efficiency is concerned. We do not, however, take this short-term wiew, but think that we should take into account the possibility of

improving the production efficiency of these products by introducing appropriate policy changes in the future.

As Table 5-1 depicts, the great majority of state owned textile industries operate at such high levels of inefficiency that their revenue does not cover their operating costs in efficiency prices. The more extreme cases exhibit a negative value added at world prices, meaning that the economic value of their output does not cover the economic cost of the traded inputs. Out of the 10 firms out of 15 that are relatively inefficient, 3 appear to have negative value added. On the basis of economic criterion it seems that the economy would benefit from closing these as well as all firms that appear very inefficient. Again we should not take this short-term view, because, these industries can be turned into efficient producers by introducing certain restructuring schemes and policy changes. Moreover, it is socially worthwhile to keep many of these industries in operation eventhough they would be unacceptable on economic grounds.

To check whether the operation of the current government policies are in line with the objectives of economic efficiency we present the estimates of the matrix elements O through Z as introduced in Tables 4-1 for all firms.

According to the estimates, wide differences are calculated between economic and private profitability indicating price distortions both in product and factor markets. Most of the distortions are policy imposed. The quantitative estimates further indicate that in a number of cases the effect of government policy was not consistent with the presumed

objective of economic efficiency. For 11 firms, V is negative, indicating inefficiency, but for 10 of these firms R is positive, indicating policy incentives. On the otherhand, for one firm both R and V are negative indicating policy disincentives.

6.2 Recommendations

Although the policy actions regarding the state owned textile industries will depend on the current and potential level of efficiency of each firm, on the basis of our empirical findings we hereby forward the following specific recommendations to:

I The Government

1. Restructuring economically inefficient firms: Although certain restructuring measures have already taken place since 1980, most firms still require restructuring. Specific restructuring for these firms are necessary; the nature and scope of these measures will include, in many cases, new investments to replace wornout equipment, to eleminate bottlenecks in production or to modify the input-output mix.
2. For those industries that have a lower DRC. the allocation and use of resources have been economically efficient. Given this, additional investment to replace import and save further foreign exchange is desirable.
3. The reduction in the protection rate and its discretionary nature among industries should be an important policy objective of the government and gradually moving towards greater uniformity in providing incentives would help improve the efficiency of the textile industries.

4. In light of shortage of skills and decrease in labour productivity in some industries, it would be desirable for the government to provide a framework of incentives and regulations which would allow the free movement of skilled labour. In this connection the government should lift off the policies that hamper labour mobility among different sectors of the economy.
5. Given the fact that the government wage controls keep down the wage of skilled workers relative to the growth of inflation and recognizing its adverse effect on productivity, we recommend that the government protect the wage of skilled workers from being eaten up by inflation.
6. Given the fact that some industries face a liquidity problem, we recommend the government allivate the burden of the transfers to the Treasury for the affected firms.
7. It would also be advisable for the government to modify the existing price control policy and improve the timeliness in commodity price adjustment following movements in the input cost structure.
8. As indicated earlier, the efficient operation of some firms appears to be partly affected by the fact that many of the firms' decisions are taken outside the firms. In order to overcome this problem, enterprise managers should be given increased responsibility and would be held accountable for the operation of their factories.
9. There has been a tendency to place over-emphasis on production targets when considering the performance of the textile firms to relative neglect of their efficiency. The existing system of annual production targets has its

own shortcomings. Annual production targets have not been conducive to high productivity and cost reduction. Hence, the contribution of the State owned textile industries to the national economy would be strenthened by establishing a system of annual productivity targets. This productivity targets should aim at reducing unit cost of production in economic prices.

10. In order that the textile sector may make the maximum contribution to satisfying government objectives, policies must more effectively discriminate between firms on the basis of their economic efficiency in allocating foreign exchange and providing other industrial incentives.
11. We also recommend that the government provide more pricing flexibility to management to allow the faster clearance of slow moving stocks.
12. Improved procedures for port clearance and other transport to avoid undue delays in raw material supplies are essential.

II Recommendation to the Ministry of Industry and/or National Textile Corporation

We further recommend that the Ministry of Industry and the textile corporation and through them the factories should take up the following specific policy measures:

1. At the factory level emphasis should be given to enhance cost reduction by reducing wastage of raw materials and other resources so as to maximize results from the limited resource available. In this regard each factory should create an efficient system of material management.

2. The factories should endeavour to closely match their products to customers needs by developing their own market research rather than exclusively rely on the EDDC.
3. The Ministry and the Corporation should increase and strengthen cooperation between the various government organizations such as the Ministry of State Farms Development, EDDC, MTSC, NBE etc. in order to increase the efficiency of their operation.
4. Akaki Garment Factory should diversify its line of operation.
5. The National Textile Corporation, together with the Ministry of Industry, should devise a means through which the output of the Akaki Garment Factory can be marketed on cash basis.
6. National Textile Corporation should also devise a means by which the productivity of labour can be increased particularly in the Eritrean Textile, Asmara Sweater and Akaki Garment factories.
7. We also suggest to the Corporation that the redundant labour that is found in Akaki Garment Factory and Idget Cotton Factory be reduced and transfered to factories where there is labour shortage.
8. The factories in Asmara regions should develop water wells which accumulate water during the rainy season. To this effect the National Textile Corporation should request the government for capital budget allocation.
9. The National Textile Corporation in cooperation with respective authorities should seek a means to alleviate power problems in Asmara region.

10. We strongly recommend that the Asmara Sweater Factory diversify its line of products following the market demand.

11. Considering the condition under which Idget Cotton Factory is operating, we recommend that the National Textile Corporation rehabilitate this factory.

12. Finally, we also recommend that the development to dependable maintenance programmes in factories minimize breakdowns.

ANNEX I

CONTRIBUTION OF MANUFACTURING TO GDP

1962/63 - 1972/73

Year	GDP	Contribution of Medium-Large Scale Industries		Contribution of Samall scale and Cottage Industries		Total Contribution of Manufacturing	
		Production in Milln. Birr	Share in GDP %	Production in Milln. Birr	Share in GDP %	Production in Milln. Birr	Share in GDP %
1962	2500.3	61.2	2.45	103.5	4.14	164.7	6.69
1963	2811.5	76.1	2.71	118.1	4.20	194.2	6.91
1964	3369.7	108.2	3.21	136.8	4.06	245.0	7.23
1965	3375.3	149.6	4.43	148.7	4.40	298.1	8.83
1966	3606.0	176.6	4.90	157.3	4.36	333.7	9.26
1967	3860.7	211.5	5.48	177.2	4.59	388.7	10.07
1968	4161.3	201.5	4.83	182.8	4.63	393.8	9.46
1969	4406.9	234.5	5.32	208.7	4.74	443.2	10.06
1970	4416.0	220.7	5.00	219.2	4.96	439.9	9.96
1971	4642.7	236.3	5.10	227.2	4.89	464.0	9.99
1972	5140.8	266.3	5.18	241.3	4.69	507.6	9.87

SOURCE: - Ministry of Industry

ANNEX II

ETHIOPIA: RECENT ECONOMIC AND INDUSTRIAL GROWTH

(Birr Millions)

	1974	1975	1976	1977	1978	1979	1980	1981	1982
GDP at current market price	5524.5	6004.0	6826.3	7265.3=	7985.5	8498.8	8854.4	9168.8	9775.0
GDP at const. Factor Cost[1]	3939.5	4031.2	4048.6	4009.3	4219.2	4451.6	4586.2	4653.8	4844.6
Agriculture value added	1902.0	1953.7	1945.8	1922.2	1968.4	2062.2	2112.7	2115.1	2173.2
Manufacture value added	360.5	355.2	357.8	358.0	411.7	439.7	439.3	457.4	489.3
M & L Scale value added	170.6	167.2	168.9	169.1	215.2	237.1	251.0	261.2	272.4
Handicrafts & S.S. Man. GDP at Factor Cost	189.9	188.0	188.9	188.9	196.6	201.5	206.4	211.6	216.9
Structure of GDP (%)									
Share of Agriculture	48.3	48.4	48.3	47.9	46.7	46.3	43.4	43.4	44.9
Share of M & L scale indust.	4.3	4.1	4.2	4.2	5.1	5.3	5.5	5.6	5.8
Share of Hand. S.S. Industry	4.8	4.7	4.6	4.2	4.7	4.5	4.5	4.5	4.6
Share of Manufacturing Industry	9.1	8.8	8.8	8.4	9.8	9.8	10.0	10.1	10.5
Annual Growth Rate (%)									
GDP at const. factor cost				0.6[2]	5.2	5.5	3.0	1.5	4.1
Agriculture				0.3[2]	2.4	4.8	2.4	0.0	2.7
M & L scale industry				0.2[2]	27.3	10.5	5.6	4.1	4.2
Hand. & S.S. industry				0.2[2]	4.0	2.5	2.5	2.5	2.5

1. Provisional/ at 1960/61 constant prices
2. At 1960/61 constant price
3. Average annual growth for three years 1974 - 1977

SOURCE:- Ethiopia: Recent Economic Development and Prospects, World Bank Report No. 483-ET. Extracted from various tables.

ANNEX III

MATRIX ELEMENTS

COSTS AND BENEFITS OF THE SURVEYED FIRMS

('000 Birr)

Sr. No.	Industry	PRIVATE PRICES Revenue O	Input Cost P	Fact. Cost Q	Profit R	EFFICIENCY PRICES Revenue S	Cost T	Input Cost U	Fact. Profit V	POLICY EFFECTS Revenue W	Input Transfer X-	Input Transfer Y-	Net Transfer Z-
1	Asmara Textile Mill	23023	10972	7098	4953	11071	2955	5285	2831	11952	-817	-1814	2722
2	Debre Birhan Wool Fac.	9477	1947	2896	4634	4599	1354	2480	715	4928	-593	-416	3919
3	Addis (Augusta) Garment Factory	5927	2636	1002	2289	2845	1883	786	176	3082	-753	-216	2113
4	Asmara Sack Factory	8366	3728	1826	2812	4016	2574	1429	12	4350	-1154	-397	2799
5	Bahir Dar Text.Mill	40643	17754	10924	11965	19508	13298	8598	-2388	21135	-4456	-2326	14252
6	Adey Abeba Yarn Fac.	18926	7868	8964	2094	9084	5781	8092	-4789	9842	-2087	-872	6883
7	Ethiopian Thread Fac.	6077	3450	10670	1560	2917	2575	894	-534	3160	-875	-173	2094
8	Akaki Textile Mill	69846	37379	20592	11875	33526	27616	16019	-10109	36320	-9763	-4573	21984
9	Dire Dawa Textile Fac.	92187	52924	24986	14277	44250	38420	17137	-17137	-11307	47937	-14504	25585
10	Mehar Fibre Factory	11183	6315	3982	885	5176	4276	2961	-2061	6007	-2040	-1021	1937
11	Fibre Fac. of Ethiopia	14803	8906	5066	831	7105	6171	3917	-2983	7698	-2735	-1148	3815
12	Progress (Idget) Cotton Factory	9848	5926	2950	972	4727	4437	2250	-1960	5121	-1489	-800	2932
13	Akaki Garment Fact.	18411	12718	2584	3109	8837	9514	1975	2652	9574	-3204	-609	5761
14	Asmara Sweater Fac.	1467	926	689	-148	704	824	531	-651	763	-102	-158	-503
15	Eritrean Textile Ind.	7170	4778	1491	901	3442	3597	1182	-1337	3728	-1181	-309	2238
	T o t a l	337354	178227	96117	63010	161757	125257	73536	-37037	175597	-52973	22581	100047

ANNEX IV

MATRIX ELEMENTS

COSTS AND BENEFITS ON THE PRODUCTS CONSIDERED

('000 Birr)

Sr No	Product	PRIVATE PRICES				EFFICIENCY PRICES				POLICY EFFECTS		
		Revenue O	Input Cost P	Factor Cost Q	Profit R	Revenue S	Input Cost T	Factor Cost U	Profit V	Transfer W	Input Transfer X	Factor Transfer Y	Net Transfer Z
1	Hosiery	829685	360221	426631	42833	398248	286155	351696	-239603	431437	-74066	-74935	288436
2	Sacks	9943145	5003661	2836106	2103378	5609378	3375678	2028332	2204828	3433767	-1627983	-807774	1898550
3	Dyed Fabrics	37948353	15683781	19643403	2621169	18215209	11840457	14803283	-8428531	19733144	-3843324	-4840120	1104970
4	Acrylic Yarn	18346000	13140246	5123023	82731	8806080	9353985	3927277	-4475518	9539920	-3786261	- 1195746	53024
5	Grey Fabrics	11744526	6748800	5104977	-109251	5637372	5115158	3768644	-3246430	6107154	-1633642	-1354379	313717
6	Twine	1115909	1301676	902788	-1088555	535723	893221	669972	-1057470	580186	-408455	-232816	-3108
7	Woolen Blankets	8143037	1853978	2365585	3923474	3908658	1361621	1938121	608916	4234379	-492357	-427464	33145
8	Carpets	642249	378452	281244	-17447	308280	260712	249542	-20197	333969	-117740	-31702	18452

SUMMARY OF EQUIPMENT AND PROCESSES IN 1980

	Asmara Text. Mill	Debre Berhan Well Fac.	Addis Gar. Fac.	Asmara Sack Fac.	Bahir Dar Text. Mill	Adey Ababa Yarn Fac.	Ethiopia Thread Factory	Akaki Text. Mill	Dire Dawa Text. Fac.	Meher Fibre Fac.	Fibere Fac. of Ethiopia	Idget Cott. Fact.	Akaki Gar. Fac.	Asmara Sweat. Fac.	Eritrean Text. Industry
No. of employees	2758	667	362	743	2779	1545	450	6162	5631	1561	1680	1191	1183	257	857
No. of shifts	3	3	1	3	3	3	3	3	3	3	3	3	2	2	2
I. Production Equ.															
a) Spinn.& Doubling															
Ring spindles -cot.	25384			7568	20000	10720		49672	50352			6795			7992
" " -acry.									5100						
" " -wool		620													
" " -conden.	384								294						
Box spinning spind.								600							
Doubling spindles	3224			2160	224	360	1728	4796	10952						144
Combinning machines	9							4	6						
b) Weaving															
Cotton Looms	426			136	406			829	10952						
Balanket Looms-cot.		40				14		24	6						
" " -acry.	14							10							
Wollen Looms	10														
Carpet looms	1														
c) Stichbonding mac.						3									
d) Knitting machine															
Circular machines	38				4			14							49
Flat bed machines	2							2						4	13
V Bed machines															
Manual flat bed															
Manual V bed															
e) Sewing														78	
Sewing machines	158		89										267	42	200
II Finishing Pro.															
Yarn dyeing bleach.	x	x		x	x		x	x	x			x			x
Loose stock dyeing															
Fabric dyeing	x			x	x	x		x	x						x
" bleaching	x			x	x			x	x	x	x				x
" printing	x			x	x			x	x						x
" raising	x	x		x		x		x	x	x	x				
" finishing	x			x	x			x	x						
III Cotton Wool Mak.															
IV Ginnery	x					x		x				x			x

SOURCE: (1) Shirly Institure, Sector Study of the Ethiopian Textile Industry

ANNEX VI

LABOUR PRODUCTIVITY IN STATE OWNED TEXTILE INDUSTRIES IN 1980 (IN BIRR)

Sr.No	Industry	Value
1	Asmara Textile Mill	2954
2	Debre Birhan Wool Factory	4748
3	Addis (Augusta) Garment Factory	3186
4	Asmara Sack Factory	1967
5	Bahir Dar Textile Mill	2235
6	Adey Abeba Yarn Factory	2152
7	Akaki Textile Mill	672
8	Dire Dawa Textile Factory	1054
9	Ethiopian Thread Factory	823
10	Meher Fibre Factory	588
11	Fibre Factory of Ethiopia	556
12	Progress (Idget) Cotton Factory	244
13	Akaki Garment Factory	-576
14	Asmara Sweater Factory	466
15	Eritrean Textile Industry	-181

SOURCE:- Computed by the Author from the Data Collected at Firm Level.

ANNEX VII

ETHIOPIA'S TEXTILE INDUSTRIES EFFICIENCY STUDY

INTERVIEW QUESTIONNAIRE

1. General Information

1.1. Name and mailing address of firm _____

1.2. Location of factory _____

1.3. Year production began _____

1.4. Date of accounting year: From _____ to _____

1.5. Please provide the information requested below for financial year 1980 (1973 E.C.)

2. Sales of Own Production

2.1. Please identify the firm's five leading products, in terms of total sales and list them down in the order of their importance in total revenue. In case where you produce less than five products treat them all

a) Total revenue from all operations _____

b) Sale revenue from the five leading products _____

Sr.No.	Name of the Product	Sales Revenue	% age share in total revenue
1			
2			
3			
4			
5			

2.2. Stock of finished goods (in value)

- Stocks beginning of year _____

- Stocks end of year _____

ANNEX VII

2.3. Stock of finished goods for each of the 5 products

	Product 1	product 2	product 3	product 4	product 5
Stock beginning					
Stock end					

2.4 For each of these products indicate the ex-factory value (excluding duty and sales taxes) of domestic sales and the ex-factory (f.o.b.) value of any production which was exported in the year 1980 (if any)

Sr No	Name of Product	Domestic Sales Quantity	Domestic Sales Value	Exports Quantity	Exports Value
1					
2					
3					
4					
5					

2.5. The 1980 unit selling price for each of the five products

Sr No	Name of Product	Unit Selling Price
1		
2		
3		
4		
5		

3. Stocks of Raw Material

- Stocks Beginning of Year _____
  - Imported _____
  - Domestic _____
- Stocks End of Year
  - Imported input _____
  - Domestic input _____

ANNEX VII

3.1 Raw Materials Used

3.1.1 For Imported Inputs

a) Total delivered cost of imported inputs used for producing the five major products _____ (including duties and taxes).

For the most important imported inputs, please give the following informations:

Input	Quantity	CIF Prices	Custom Duties	Taxes	Transport & Handling	Total

(Please continue on a separate sheet if necessary)

b) Please provide the percentage share of each of the five products in total import cost

Sr No	Name of Product	% age share in total import cost
1		
2		
3		
4		
5		

ANNEX VII

3.2. For Locally Purchased Inputs

a) Total cost of local inputs used: _____

For the most important inputs, please give the following information:

Inputs	Qty	Purchase Price Excluding Taxes/Transport	Taxes	Transport and Handling	Total Delv. Price

b) Please provide the percentage share of each of the five leading products in total local cost of inputs

Sr. No	Name of Products	% age share in total local input supplies
1		
2		
3		
4		
5		

ANNEX VII

3.3. Fuel and other Expenses

	Quantity	Value
Fuel oil		
Diesel oil		
Electricity		
Wood and charcoal		
Steam		

3.4 Cost of repair and maintenance work done by others for this establishment _____

3.5 Total value of water consumed _____

3.6 All taxes (other than income tax) _____

3.7 Stationary, telephone and mailing expenses _____

3.8 Transport cost _____

3.9 Interest paid (payable) _____

3.10 Payment for accounting, legal commissions _____

3.11 Rent payable for rental of structure & equipment _____

3.12 Insurance premiums _____

3.13 Insome tax paid (payable) on profit _____

3.14 Capital charge _____

3.5 Fixed Assets

	Book value Begn.year	New Purchase	Sales	Depreciation	Book value end of year
Dwelling houses					
Non-resid.bldges (stores, factory shades etc.)					
Machinery/equip.					
Vehicles					
Others (office furniture) & fixture					
Total					

3.6 Working capital =(current assets - current liability)

ANNEX VII

4.0 Labour Force

Please indicate below the number of workers employed by skill category with their total annual wages and employee benefits i.e. (subsistence, housing, transport, medical, clothing etc.):

	ETHIOPIANS			FOREIGNERS		
Labour	Number	Total Wage Paid	Employee benefits	Number	Total Wage Paid	Employee benefits
Professionaly skilled						
Technically skilled						
Clericaly skilled						
Unskilled						

6.0 Technology

6.1 Wat was the date of installation of the original plant?

6.2 What are the dates of replacement or additions to equipment?

6.3 What was the country of origin of the equipment, by type?

6.4 How was this equipment selected?

6.5 Was the equipment new or second hand?

6.6 Describe any technical problem you are facing currently?

ANNEX VII

7.0 Please provide the unit cost of production for each of the 5 products by elements of cost

Sr No	Element of cost	Product (1)	Product (2)	Product (3)	Product (4)	Product (5)
1	Raw material					
2	Labour					
3	Manufacturing over heads					
4	Administrative expenses					
5	Selling expen.					
6	Excise tax					
	Total					

ANNEX VII

8.0 Please provide the technical specification of these 5 leading produts.

Sr. No.	Name of Product	Technical Specification
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____

9.0 Capacity Utilization

9.1. Did the firm achieved full capacity by 1980?

Yes _____ No _____

If not what was the factory's operating capacity by % age

9.2. Existing capacity utilization - product specific

Sr. No.	Name of Product	Capacity Utilization (in %)
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____
5	_____	_____

9.3. What was the principal obstacles to achieving full capacity?

Lack of: Local inputs _____, imported inputs _____ market _____, supervisory labour _____, skilled labour _____, other (specify) _____.

ANNEX VII

10.0 Subsidies

Receipt of subsidy (if any)

Sr.No.	Name of Product	Birr
1		
2		
3		
4		
5		

11.0 Effects of certain government policies

11.1 Foreign exchange allocations

What was the birr amount to foreign exchange requests and allocations to the firm during the following years:

Year	Requested	Allotted
1979		
1980		
1981		

ANNEX VII

11.2 Wage Policies

Describe the effect on your firm's employment practice, wage bill and overall profitability of the government minimum wage legislation. Do you have any suggestions for further policies regarding worker's income related to productivity such as piece rate? Decrease?

12.0 General Comments

12.1 In your opinion which and how would government policies currently affects your operation. In what ways if any government assist you? In what ways does it have a negative impact?

12.2 What suggestion do you have for ways in which government impacting on the manufacturing sector could be improved? What measures would you recommend to government?

12.3 Finally, please attach with this questionnaire a copy of your actual profit and loss statement, total production schedule for all products and sales schedule for all products.

Thank you for your cooperation

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D E C L A R A T I O N

THE THESIS IS MY ORIGINAL WORK AND HAS NOT BEEN PRESENTED FOR A DEGREE IN ANY UNIVERSITY

Gezahegne Mitikie

Signature

THE THESIS HAS BEEN SUBMITTED FOR EXAMINATION WITH MY APPROVAL AS A UNIVERSITY ADVISOR

Befekadu Degefe (Ph.D)

Signature