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MANUFACTURING SECTOR AND TRADE LIBERALIZATION IN ETHIOPIA

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TABLE OF CONTENT

LIST OF TABLES

LIST OF BOX

LIST OF FIGURES

Pages

Abbreviations

BOP	Balance Of Payment
GDP	Gross Domestic Product
IMF	International Monetary Fund
ISI	Import Substitution Industrialization
SAP	Structural Adjustment Program
SSA	Sub-Sahara Africa
SITC	Standard International Trade Classification
HHI	Herfidhal-Heschman Index
EEX	Effective exchange rate of export
EEM	Effective exchange rate of import
PPE	Parallel market premium
DEA	Data envelopment analysis
TFP	Total factor productivity
ESAF	Enhanced structural adjustment facility
LR	Log likelihood ratio
EPRDF	Ethiopian People Revolutionary Democratic Front
AERC	African Economic Research Consortium
WTO	World Trade Organization

ABSTRACT

Analysis of the operation of the manufacturing sector in connection with trade liberalization is important. It helps to see what impacts (positive or adverse) has happened following the change in trade regime and envisages what action to take in the future. Review of trade related policy measures and assessment of the extent of liberalization are made using some indicators. Both econometric and descriptive techniques are also applied to investigate the operation of the manufacturing sector and the association between measures of productivity and some indicators of liberalization.

The results indicate that manufacturing output, value added, capital expenditure and sales have increased after the reform when compared with the pre reform situation. Share of manufacturing export, however, depicted a declining trend after 1995/96. There is also an increase in the number of firms though manufacturing employment has not shown significant changes between the two periods. The increase in output that observed after the reform is mainly attributed to the performances during the initial periods of the trade reform than being the whole period phenomena.

Only a minor increase in productivity has been observed in the post reform period. Increased competition across domestic firms and fall in parallel market premium are found to affect the productivity of the manufacturing sector positively, while the effect of change in relative prices (measured by ratio of effective exchange rates) is not significant. Size of the different sector also has an implication on efficiency.

The observed results, in general, imply that strengthening domestic competition by encouraging entry and liberalizing the foreign exchange market with accompanied trade policy adjustment has impacts on the performance of the manufacturing sector. Emphasizing the role of prices alone is not, however, sufficient to bring the intended changes in productivity.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Both during the Imperial and the Derge regimes, Ethiopia's trade had been characterized by protectionism. The underlying idea of the protectionist measure under the former regime was the goal of mobilizing government revenue by imposing tax, maintaining the BOP at a sustainable level and providing the domestic economy with the necessary protection. Apart from these objectives, during the Derge, the objective was also to control and gradually extinct the private sector and most importantly to socialize the economic activity (Befekadu and Berhanu1999/2000:253)

In view to strengthen the protectionist measure, the exchange rate was pegged against the US dollar for a long period of time. High tariff rate, quota, trade licensing and foreign currency allocation were used to curtail imports. The tariff rate was as high as bout 230% with a tariff dispersion of 225% in the last days of the Derge. Exporters were forced to surrender 100% of the foreign exchange earned from exports and there was a government-marketing channel for all imports and major exports.

Government intervention in the industrial sector was limited during the Imperial regime. Most of the medium and large-scale industries were owned by the private sector, with foreign investment playing a major role. Under the Derge, industries owned both by foreign and

domestic investors were confiscated and the government started to play a major role in the sector. Capital ceiling was put in place to discourage the private sector. Until the promulgation of "Small Scale Industry Development Decree" in 1989 and a special decree on investment in 1990, opportunity for private sector participation in the manufacturing sector was restricted to a limited range of small ventures; and individuals and partnership were not allowed to own several enterprises.

The policy measures taken by the government, however, created a disincentive to the already weak export sector and crippled the economy.

> Trade and exchange rate policies that were adopted before the Transitional Government came to power were more effective in depressing incentives to export production than in repressing import demands. In situation of low import substituting capacity, this has led to a high demand for imports that cannot be satisfied by export earnings or domestic production and caused a persistent BOP deficit. An equivalent tariff of 71% in 1977, for instance, had led to a 43.5% fall in relative prices of coffee, while giving average "true" protection of only 27.3% for import competing sector. Alem, (1995:33)

Apart from limiting the contribution of the private sector, the interventionist policy even did not improve the performance of the public sector. Substantial transfer of profit to the government, limited managerial autonomy, conflicting managerial priorities, and the separation of producers from consumers by the generally obligatory mediation of state marketing channels adversely affected the performance of the pubic enterprises (UNIDO, 1991). Growth of GDP, investment and saving were also adversely affected by the measures taken. For instance, between 1982/83-1990/91 GDP growth was only about 2.01% only while investment and saving declined to 15.2% and 7.2% of GDP, respectively.

In 1991/92 EPRDF took power and started to implement Structural Adjustment Program, which was considered as a panacea to the problems of the country. The program has different successive phases (Government of Ethiopia Policy Framework Paper, 1998) in which, among others, a gradual liberalization of trade and foreign exchange markets are the centrals at each stage. An auction system (both at the retail and whole sale level) have been successively introduced to determine the price of the foreign exchange, and this has been replaced by an inter bank foreign exchange market in 2001. Quotas have been replaced by tariff and later the highest tariff rate has been reduced from 230%, in the last periods of the Derge, to 40% as of 1999/2000, with a tariff dispersion of 35%. The number of official tariff rate decreased from 24 to 6 over the same period (Economic Focus vol 3, 2000:33). Duties on all exports, except coffee, were removed and export retention scheme has been established.

To promote the performance of the private sector, a new investment proclamation has also been promulgated, and subsequent revisions were made to the same so as to relax some restrictions. It appeared that the number of investment projects has increased following the new policy direction and enactment of the new investment code. For instance, in the manufacturing sector, about 609 new projects with capital of about Birr 1,451 million and 89 expansion projects with a capital of about Birr 347 million have commenced operation during July 1992 to July 1999(See Ethiopian Investment Authority)

The growth of GDP has revived and increased to about 5.6% during 1991/92 to 1999/2000; the quantity of export has also shown an increasing trend though there is a fall in the international price for coffee in the last two years. Gross capital formation has, however,

remained at about 15% of GDP, while saving has declined to about 4.2% over the same period.

In general, despite the increase in GDP observed after the reform, the structure of the economy has, however, remained almost the same to what existed under the preceding regimes. For instance, during 1982/83-1990/91, agriculture accounted for about 51.95% of GDP, followed by the services sector, which has a share of 35.53%, and industrial sector, which has a share of 12.52%. After the reform, the average share of the three sectors amounts to 49.57%, 39.61% and 10.82%, respectively, depicting that the structure of the economy has almost remained the same for about twenty years. The contribution of large and medium scale manufacturing sector to total industrial production has also remained the same in both periods, with the share amounting 38.83% and 38.97% before and after the reform periods, respectively.

1.2 STATEMENT OF THE PROBLEM

In a desire to attain economic development, most developing countries pursued inward looking policies since early 1950s. On the basis to protect an infant industry they imposed high tariff and quantitative restrictions on imported goods. Administrative foreign currency allocation and import licensing were also used to curtail imports.

Empirical studies have shown that except in few countries, which, after a course of time, have changed their industrial policy and started to follow an out-ward looking strategy (the Republic of Korea, Singapore, Taiwan and Hong Kong), many of the countries that followed

import substitution industrialization were not successful in attaining their initial goal. It is also argued that as accesses to the rapidly changing technologies in the world market depends on the increased competitiveness of industries in the concerned countries, developing countries that depend on the ISI policy have been severely affected by their in ward looking policies.

The above adverse effects of inward looking policies made many developing countries to reconsider their policies since 1980s. Many countries started to pursue SAP, which, among others, has trade liberalization as its main component, with the support of the IMF and the World Bank.

Despite the gains expected from trade liberalization, serious objections and skepticism about its effectiveness remained (Thomas, Nash, and associates, 1991). Since trade liberalization has an implication on employment, government revenue, income distribution, the performance of domestic manufacturing industries etc, governments are afraid to implement it to the required extent. In many cases, including the SSA, results from liberalization are not as expected; no major increase in GDP growth has occurred; unemployment became rampant; the structure of exports has not changed; and there is no indication of significant productivity and efficiency gains in the manufacturing sector.

These problems raised a question as to what to do to bring successful developments in developing countries. Questions like whether to proceed with further liberalization or not are in the mind of many economic agents. The responses could, however, vary. For instance, it is argued that there is no need to introduce far-reaching changes, and a combination of

protection and liberal trade policies may be the preferred option (M.Lyakuraw, 1991:22). As stated in M.Lyakuraw (1991), Bhagwati (1988) even argued that the credibility of an out-ward policy is greater, and hence appropriate investment is more likely to be forthcoming if actively promoted by an interventionist state than they are simply the out come of a potentially changeable laissez-faire approach. Ocampo (1990) showed that the growth of manufacturing output and export from the 1930s to mid 1970s resulted more from its integration with the domestic market rather than the use of explicit trade policy instrument. On the contrary it appears that others, including international financial institutions like the IMF and the World Bank, advocate a full liberalization of the trade system.

Ethiopia started to take liberalization measures in 1992. Though the country has been implementing the liberalization program on a gradual basis there sometimes come a misunderstanding between the Government and the international institutions, particularly with the IMF, on the speed and extent of liberalization. For instance, in October 1996 the country entered in to a three year enhanced structural adjustment facility with the IMF and began the third phase of the program, which covered the period 1996/97-1997/98. Nevertheless, the ESAF agreement expired on October 1997 due to the disagreement between the Fund and the government on the policy packages (Government of Ethiopia Policy Frame Work Paper, 1998). This indicates the cautious attitudes on the side of the government to implement the liberalization program to the extent required by the Fund (the supporter and the advocator of the reform program)

In addition to cautiousness of the government in implementing the policy reform, it is also argued that domestic industries should be protected in view of their limited capacity to resist

international competition that arise as the result of trade liberalization. “The main constraints to private investment in Ethiopia and what explains the poor performance of this sector are not lack of sufficient liberalization. Instead, it is all the factors that domestic investors have been complaining about such as shortage of demand, in ability to compete with cheap imports” (Befekadu and Barhanu. 1999/2000:49). Some evidences also indicate that the efficiency of the manufacturing sector does not appear to be satisfactory. For instance, Rebeka (2001) showed that the efficiency of the privatized large and medium scale industries is weak and even declined in some cases.

Despite the trade reform measures undertaken by the government it is said that the manufacturing sector is in a difficult situation.

> The economic reform program undertaken includes the devaluation of the Birr, which is supposed to make domestic industries competitive. However, as a result of lowering import duties, the sector’s dependence on imported inputs, and a host of other factors, the manufacturing sector is losing its domestic market. Edible oil factories, shoe factories, grain mills, garment factories, plastic factories and even tea packing firms are being closed (Brook, 2001)

In general, advocators of trade liberalization argue that it improves the productivity and efficiency of the manufacturing industry by increasing real output through shifting resources. Others, however, argue that protection is important to bring the desired growth in the manufacturing sector. These views are also prevalent in Ethiopia. Therefore, in order to judge the impacts of trade liberalization (positive or adverse), there is a need to evaluate the performance of the manufacturing sector. Whether to pursue a further liberalization and to what speed should it be implemented also depends on, among others, the experience the country gained from its past performance.

1.2 OBEJECTIVE OF THE STUDY

The general objective of this study is to assess the extent of trade liberalization in Ethiopia and evaluate its impact on the operation of medium and large scale manufacturing industries. Specifically, the study concentrates on the following:

1. Assessing extent of trade liberalization in Ethiopia by considering major trade policies taken by the government and looking at some indicators of liberalization.
2. Analyzing the responses of the medium and large scale manufacturing industries to the reform by considering
    i. Whether or not output has increased by shifting resources
    ii. Whether or not productivity has increased due to adjustment by the manufacturing sector.

1.4 SIGNIFICANCE OF THE STUDY

One of the objectives of trade liberalization is to correct price distortions and avail quality raw materials to the manufacturing sector. These and the subsequent measures taken to increase competition following liberalization are expected to promote the performance of the manufacturing industries by increasing productivity and efficiency. Whether or not this has been attained is important as it guides policy makers to decide on what actions to take in the future.

In nutshell, the implementation of trade liberalization program and what signals, appropriate or otherwise, have been flashed to the operators regarding the credibility and the

sustainability of such policy and policy impact on industrial development and export promotion needs to be researched. This should be done overtime, pointing out possible inconsistencies in implementation, possible reversals in policies, etc. Lessons from other countries, although important, cannot replace the study of the special condition in the country (M.Lyakurwa, 1991:24)

This study will, therefore, give an insight on the operation of the manufacturing industry in Ethiopia following trade liberalization. It may also help to have an idea whether further liberalization is needed in the future or not.

1.5 ORGANIZATION OF THE STUDY

Chapter two deals with review of the literature and chapter three considers the methodologies used in the study. In chapter four review of the trade reform measures and indicators of trade liberalization are discussed. Chapter five and six focus on the performance of the manufacturing sector. Discussion regarding real output, sales, capital expenditure and value added are made in chapter five, while chapter six deals with productivity analysis. Summary and conclusion are presented in the seventh chapter.

CHAPTER TWO

Literature Review

2.1 THEORETICAL LITERATURE

Views on trade vary from one school of thought to another. On the basis that a nation benefits from trade at the expense of the other nations, the Mercantilist School advocated restriction on imports, provision of incentives for exports, and strict government control of all economic activities. Contrary to this, the Classical economists believe in free trade right from the time of Adam Smith who advocated for a policy of laissez-fair (a little government intervention in the economic system). For Smith, When each nation specializes in the production of the commodity of its absolute advantage and exchange part of its output for the commodity of its absolute disadvantage, both nations end up consuming more of both commodities (Salvatore, 1998:46)

Smith's idea of absolute advantage was later replaced by an influential theory of comparative advantage, initially introduced by Ricardo. According to the comparative advantage theory, countries specialize in the production and export of commodities over which they have less absolute disadvantage. The opening up of free trade between nations leads to an increase in demand for the product of each country, in turn, making them to specialize in the production of that particular good over which they have a comparative advantage. The increased production further leads to an increased supply of goods and services in the market, in turn enhancing the welfare of the society.

The Classical trade theories (both smith's absolute advantage and Ricardo's comparative advantage) have, however, many limitations that may not work in practice, and in some cases does not tally with the situations that exist in developing countries. In short, they are based on the labor theory of value (consider labor as the only factor that determine the value f output); do not consider the role of transport cost in affecting the comparative advantage; assume quick factor mobility across sectors in response to changes in international prices; assume full employment and a perfectly competitive market condition. Obviously, the change in these assumptions has an implication on the prediction of the theories.

An important development in the area of international trade following the Classical theory is the Heckscher-Ohlin theorem. Unlike the former, which assumes that the value of output is determined by the value of labor that entered the production process, the H-O theorem includes capital as an additional factor. It proposes that the immediate cause of international trade is the difference in the relative price of commodities between countries, which, in turn, arise due to difference in factor supplies of the two countries. On the basis of this it predicts that a country will export a commodity that intensively uses its abundant factor and import goods that intensively use its scarce resources. In this case, apart from the gains mentioned under the comparative advantage theory, trade leads to equalization of relative and absolute returns to homogenous factors of production.

Despite its theoretical prominence, the H-O theorem also suffers from many of the assumptions that it considers. Among others, the theorem assumes that there is no factor intensity reversal (i.e. if a commodity is labor intensive in a labor abundant country it will remain labor intensive in the labor scarce country, and if it is capital intensive in the capital

abundant country it will remain capital intensive in the capital scarce country). If such a situation does not exist the prediction of the theorem fails.

In general, despite the limitations mentioned above, both the classical and the H-O theorem advocate for a liberalized trade system, making the existing restrictions on trade unjustifiable.

Though the classical theory stressed the need for free trade, in 1950s, 1960s and 1970s another view on trade started to emerge. The great depression of the 1930s made the dollar price of primary commodities to fall by 50% between 1929 and 1932 and the value of export by some 60% (Sodersten and Reed 1994:409). This led to the fall in the terms of trade of the primary commodity exporters (developing countries). Since developing countries had already accumulated debt, the fall in prices increased real cost of debt. Besides, the inflow of capital which these countries had become accustomed to was cut off abruptly. These situations made developing countries to believe that the pattern of trade prescribed by the classical theory is no more useful to them and instead prohibited them from reaping the dynamic benefit of industrialization.

Views against the Classical trade theory get momentum after the work of Prebisch, Singer and Myrdal (Salvatore, 1998:337). For them productivity increase in industrial countries result in higher wages and thereby higher prices, while productivity gains in developing countries result in a fall in export prices with a further decline in the terms of trade. They also argued that due to the low-income elasticity of the primary commodities, the terms of trade of developing countries with the developed nations would further deteriorate. Their point in general is that given the production structure of the developed and developing

countries, it is not beneficial for the latter to engage in trade with the former as prescribed under the classical theory.

The above conditions forced developing countries to look for an appropriate strategy. Industrialization, in particular, import substitution industrialization (ISI) was considered as a remedy to the problems. To fulfill their objectives, the countries had protected existing domestic industries or promoted new ones through strong effective protection, which rise sharply with the degree of processing. Trade control mechanisms like imposition of surcharge; import licensing, guarantee deposit, prohibition of capital repatriation, and multiple exchange rate system were used to curtail imports so as to encourage domestic industries.

The industrialization strategy, in particular, ISI was expected to bring faster technological progress, reduce unemployment and underemployment, rising the terms of trade and ensuring stable export earnings, which in turn relieve the BOP problem of the countries. Though there were strong arguments behind and countries had pursued it, the ISI brought a limited success or led to failure. Country experience shows that industrialization through import substitution led to inefficient method of production, higher consumer prices, and increased unemployment and underemployment. The lack of raw materials due to scarce foreign exchange led to excess capacity in industries and the protections rather made domestic firms inefficient. The neglect of the agricultural sector led to a fall in export and an increase in import of food items, further aggravating the already uneven income distribution by disfavoring the poor who were employed in the agricultural sector (Sodersten and Reed, 1994)

It has also been argued that protection of domestic industry insulates it from market elsewhere and this is likely to reduce the incentive to adopt new technology and encourage inefficient practices. Practice also showed that despite protections given to domestic industries to strengthen their capacity and competitive position, they rather remain infant, making the existing costly protection structure to continue.

Due to the poor economic performances under the import substitution industrialization, and encouraged by the success of the outward -oriented countries (Hog Kong, Korea, and Singapore), developing countries started to take trade liberalization and outward looking policy measures since 1980s. The policy measures involved a reduction and simplification of average tariff, quantitative restrictions and provision of incentives to the export sector. Different western governments and international financial institutions, particularly the IMF and the World Bank, supported the liberalization policy, and took it as an important component of the Structural Adjustment Program packages.

According to Gauthier (2001), the adoption of more efficient technology or reduction of inefficiency by domestic firms through decreasing costs to resist external competition; exit of inefficient firms and an adjustment by the remaining firms through expanding the scale of their production to exploit economies of scale; and improvement of technical inefficiency by the firms lead to increased performance in the manufacturing sector. Increase in imports and exports following trade liberalization augment the spill over of international technical knowledge.

It is also emphasized that liberalization attained through tariff reduction and change in relative prices brings a proper allocation of resources across domestic firms and industries, and that exposure of domestic firms to demand from international clients increases their productivity. Experience (in countries like CoteDivore, India and Turkey) shows that increased import competition forced domestic firms to reduce their prices to the level of their marginal cost of production (World Bank 2000). The reduction in average cost following trade liberalization also leads to an increase in the profit of the firms, in turn leading to further entry by new firms. In general, the implication of the points is that trade liberalization increase the capacity, productivity and efficiency of domestic industries

Though openness is said to have the above beneficial effects, there is a possibility that it generates adverse effects. Strong competition from imports may make existing firms to contract their scale economies or exit their business in some cases. In addition, despite the current trend in favor of trade liberalization and export orientation there is still a case for the ISI strategy. For instance, as sighted in M.Lyakuraw (1992), Burton (1989), described import substitution as a development strategy that seeks to accomplish the objective of learning and in general gaining from rich countries, and at the same time the mechanism that protects domestic economy until it competes in equal terms with international producers. He also added that development is essentially and ultimately a matter of learning and searching and that in this context protection should extend the opportunities for the learning process.

As indicated in Admit 1997, Noir (1994:57) also argued that a firm that starts with a few resources in a fragile economic environment has no chance of success unless it has some protection at least during the early years. The implication is that in LDCs where the industrial

sector is at its early stage of development there is a need of protection unlike the proposal of the proponents of trade liberalization.

It must be pointed out, however, that a policy of import substitut ion may be of some benefit in the early stage of development (especially for larger developing nations), while export orientation becomes an absolute necessity only in the latter stage in the development process. Thus, rather than being alternative policies import substitution and export orientation could profitably be applied to some extent sequentially, especially in the larger developing countries (Salvatore, 1998:347). The implication being that the appropriate industrial policy for developing countries at the initial stage is an ISI than liberalization.

2.1.1 DEFINITION AND MEASURMENT OF TRADE LIBERALIZATION

Different researchers defined trade liberalization in different ways. In most works, however, trade liberalization is considered as import liberalization and/or a move towards neutrality in the structure of relative prices and/or the substitution of less distorting for more distorting forms of intervention (Greenaway, Collier and Gunning, 1997).

Review of the measures taken by those countries which implemented trade reform policies, and the conditions set by the World Bank to extend Structural Adjustment Lending to the reformers show that trade liberalization policies mainly consist of the above factors. The implication is that trade reform policies typically involve removal or reduction of quantitative or administrative import restriction, temporarily replacing these by tariff surcharges,

unification and subsequent reduction of tariff, the introduction of direct incentive to exporters etc.

Whether to include devaluation in the definition of liberalization or not is also an issue debated in the literature. In this respect, too, experiences of the reforming countries show that exchange rate policies are part and parcel of the trade reform measures taken by governments. In the particular context of Africa, Reinikka (1994) argued that controlling foreign exchange for balance of payments purpose is closely linked to import control. When devaluation is combined with a change in the mechanism of allocating scarce foreign exchange, and import of final good will be no longer discriminated against through non-issuance of licenses, this clearly qualifies as a move towards free trade. The implication is that even though devaluation is an exchange rate policy, in countries characterized by high restriction on foreign trade, it should be considered as part of the trade reform policy, as exchange rate adjustment has significant impact on imports.

From the above points one can conclude that a trade liberalization episode begins at the time when policy measures like devaluation, tariff reduction, simplification etc have taken place, and it ends with a reversal of these measures or when no further policy change in the former direction takes place.

Another important point in studying trade liberalization is the issue of measurement. Based on Greenaway, Collier and Gunning (1997), we can identify three approaches to ensure (indicate the occurrence of) trade liberalization. These are by considering changes in the actual policy measures taken by the government, the change in relative prices and by the

resulting change in quantities. It is however argued that all these measures are independently inadequate and that the appropriate way of measuring trade liberalization and identifying its episode is to use a combination of all the methods. The use of each method in measuring liberalization is discussed below.

As indicated above, policy changes are indicators of the beginning of the liberalization episodes. Analyzing the account of the trade policy changes enables us in dating the liberalization and to see how they are sequenced. In this regard, it is argued that apart from changes in trade policy (tariff, quotas and other non tariff barriers), it is important to include and analyze changes in the system of foreign exchange allocation. The major weakness of this approach is that it does not involve quantitative measures and instead focuses on subjective issues.

One of the price variables used in measuring trade liberalization is the implicit tariff. Implicit tariff measures the difference between world and domestic prices. Trade liberalization is supposed to reduce the implicit tariff. Using the implicit tariff as the measure of trade liberalization, however, has some drawbacks. The major problems are that it does not measure the incentive for producers and also it is difficult to find the level of aggregation on which world and domestic prices could be compared directly. Ideally one can, however, use ex-factory gross output prices when the focus is on incentives for producers, but these are not reported always.

The other price variable used by researchers is the change in relative price. The method involves the use of the ratio of the price of exports to the price of imports (the domestic terms

of trade index) and the ratio of the price of imports to the price of the non-tradable (the world terms of trade). It enables us to measure incentives faced by the producers. In addition to the ratios of domestic and international terms of trade, incentives faced by producers can also be measured by taking the ratio of the effective exchange rate of imports to the effective exchange rate of exports or vice-versa.

If the effective exchange rate for imports is greater than that of exports then there is an incentive for domestic firms to produce import competing goods, rather than the export good. This means that the net effect of the government's trade policy promotes the production of import competing goods, and these policies can be identified as an inward-oriented, or import substitution policies (Sodersten and Reed 1994:408). If the reverse situation happens, the policies can be identified as an outward oriented (export promoting) policies. If the effective exchange rate of imports equals the effective exchange rate of exports there is price neutrality and hence there is no incentive for domestic producers to either switch from producing goods for export or producing goods that will substitute for imports, or vice versa. In practice, however, this situation, too, is referred as a case of export promoting policy.

The change in the parallel market premium is also considered as one of the price variables that indicate the existence of trade liberalization. The change in the parallel premium is appropriate in a situation where the supply of imports through smuggling is so substantial that domestic prices of importable reflects not the official exchange rate, but the parallel rate. If, however, smuggling is very difficult (say due to strong border control), demand for foreign exchange in the parallel market will largely be the asset demand and the premium cannot be used as an indicator of trade restrictedness.

Apart from the price variables, one can also use quantity changes to measure trade liberalization. Trade intensity is one of the measures used in this regarded and is mostly defined as the ratio of trade (imports plus exports) to GDP. Since trade liberalization is expected to increase both import and export, trade intensity is expected to increase after liberalization. However, it is possible that the increase in trade intensity, which emanates from the increase in imports observed after the reform, may not be due to trade liberalization, but due to increased inflow of aid, or the increase in GDP. There is also a possibility that trade intensity could increase due to the increase in the terms of trade without trade liberalization has taken place and no substitution effect in production or demand has been observed. Despite these problems, however, in practice changes in trade intensity together with other factors have been used as a measure of trade liberalization.

The other quantity measure used in the analysis is import counterfactuals. This is a variant of the trade intensity measure. The effect of trade policy is measured by comparing the actual import volume with the counterfactual measure given by an import demand function with real income and some price variables as an explanatory variable. Given the counterfactual defined by the import demand function one can derive a measure of trade restrictedness either in price or in quantity space.

Trade liberalization by avoiding price distortion is expected to affect the use of factors of production within the import competing and export oriented sectors and, as such, lead to a change in production. Therefore, change in factor use by these sectors can also be used as the measure of trade liberalization. The expected shift is the movement of capital and labor in to

the export sector, and an increased investment in this sector of the economy. The problem of using this measure is that such data may not be published in different countries.

The problem with all the above-mentioned quantity measures is that they are likely to pick-up changes in the extent of illegal trade. For example, trade liberalization might result in a large increase in the official imports at the expense of smuggling, with little change in the total imports. Unlike price based measures, quantity based measures would then give an unrealistic indication of the change in incentive for consumers and producers

Possibly, one can also consider the ratio of the tariff revenue to import volume as one of the indicators of trade liberalization. It is said that instead of inferring restrictedness from the statutory tariff rates it is better to use this ratio as an indicator. This is on basis that the weighted rate can be minimized by cutting rate on those goods that are not imported (Knee, Lighart and Bristow, 1998).

In this study, a summary of major trade related policy measures, ratio of effective exchange rate of exports to that of imports, parallel market premium, trade intensity coefficient and the ratio of tariff revenue to import volume are used as indicators of trade liberalization in Ethiopia.

2.1.2 EVALUATING THE PERFORMANCE OF TRADE LIBERALIZATION

Once a liberalization measure has been taken it is important to analyze its impact on different sectors of the economy, as this has an implication on the future action to be taken. It is agreed that the cost of protectionist measure was the misallocation of resources due to price distortion, and thereby an increase of illegal activities like smuggling and rent seeking. In addition, in a situation where there is sever external shock trade protection coupled with foreign exchange control leads to failure of adjustment in production to change in relative prices, further affecting the functioning of the economy.

It is believed that the above problems can be avoided through liberalizing the trade regime. A liberalized regime is as such expected to bring an increase in the growth of GDP, export capacity, level of investment and employment. As the trade reform corrects price distortion (leads to price neutrality), factors of productions flow from the formerly protected sector (import substituting sector) to the export sector i.e. employment, investment and output increase in the latter sector with an additional consequence of export diversification. Productivity and efficiency will also increase in both export firms and firms that produce for domestic consumption following exposure to international competition. Moreover, the availability of imports makes firms more productive by providing them with quality raw materials.

To see whether trade liberalization has brought these results or not there is a need to evaluate its performance. To do this we need to have appropriate techniques. The technique used to

evaluate the performance of trade liberalization however has problems. First of all, it requires some reasonable counterfactual analysis, which in turn needs a strong assumption that other things remained the same over the period of the counterfactual. It is rational to expect that a full outcome of the policy emerge over a long period of time. This implies that evaluation of the performance of trade liberalization also needs judgment as to how long the liberalization program should be in place before we evaluate its success. Furthermore, it also involves deciding on the type of indicators to use to evaluate the success or failure of the liberalization.

Collier, Greenaway and Gunning (1997) proposed some criteria used in evaluating the performance of trade liberalization. These include a set of performance indicators that can be measured across countries (aggregate employment, composition of employment and trade, current account balance, gross domestic capital formation, growth of trade, growth of real output, fiscal profile and distribution of income). Comparison of the periods after and before the reform within a given country can also be made using these variables.

One of the important reasons behind liberalizing the trade regime is to create an appropriate incentive for domestic manufacturing firms so that they become efficient and productive. Contrary to these beneficial effects, however, liberalization could have an adverse effect on the performance of this sector. Increased competition from imports makes the firms less profitable and even in some cases lead to close of business; devaluation of the domestic currency affects the manufacturing industries by raising the cost of imported raw materials. Both effects reduce the productivity and efficiency of the firms. Therefore, though it is not a

comprehensive measure, one can conduct analysis on the manufacturing sector of a given economy to see the impact of the trade reform measures.

2.2 EMPRICAL LITERATURE

Empirical studies on the evaluation of the performance of trade liberalization are many although the methodologies applied could vary. The World Bank has conducted a study on countries which were given Structural Adjustment Loan to assist their liberalization policy. Other studies were also conducted on liberalizing countries both in Africa and other parts of the world. A brief review of the experiences of some countries is presented below.

One of the most widely raised liberalization episodes in the literature is the Chilean experience. Since1974 Chile started to pursue a trade liberalization policy. The major liberalization efforts taken by the country were removal of all quotas and official approvals on imports, reduction of the tariff rate (in three phases) from 750% to 10% and an introduction of consumption tax to compensate for the reduction in tariff. Restrictive fiscal and monetary policies were introduced and the budget deficit was contained to the low level. Accompanying the policies, a massive institutional arrangement was also made.

The impacts of the liberalization policy were growth in export and GDP, while increase in the quantity of imports was not significant. Substitution of capital for labor has been observed in the manufacturing industries, and the net effect on employment was positive though there was a fall in employment in those firms that used to enjoy the highest level of protection. Although production of tradable did not increase, the composition of this category

changed in favor of sub-sectors with a comparative advantage. The problem with the liberalization was that owing to factors like increase in demand that arise from the inflow of foreign exchange, fall in the terms of trade and appreciation of the exchange rate, the balance of payment of the country had fallen.

Although there was threat to the liberalization policy, it managed to be sustainable. The factors that contributed towards the sustainability were the determination of the government to carry on the reform even under unfavorable condition, stable macro environment, the behavior of the trade balance and high real exchange rate. Therefore, the Chilean experience teach us that the appropriate policy measure in trade liberalization is to remove quantitative restrictions and other distortion before reducing the tariff rate and then reduce the tariff rate to the required minimum. Removal of the anti export bias through an appropriate real exchange rate is an important measures.

The other liberalization attempt is the one undertaken in Yugoslavia from 1965 to1975. A study conducted by Havrylyshn (1991) shows that this liberalization attempt failed. The main reasons were the inappropriate macro and exchange rate policies, persistence of distorted prices and incentives, which were not eliminated in the short-lived liberalization. The macro policies taken following the liberalization were too restrictive; devaluation was inadequate (proper exchange rate was not in place); liberalization was too limited and excessive decentralization made fiscal policy a less effective instrument by putting the burden on monetary policy. The lesson from the Yugoslavian liberalization attempt, among others, is that an appropriate macroeconomic policy that complement trade liberalization is not only country-specific, but also situation-specific.

The Korean liberalization had passed through three phases: a shift to outward oriented policy, selective form of protection of the heavy industry, and non-selective industrial promotion and gradual reduction of barriers. A study by Snape (1991), using the effective exchange rate of exports and imports and the competitiveness index shows that the government maintained an appropriate exchange rate in place. By grouping products according to the extent to which they are directed towards export or domestic market, the study also showed that even though the country taxes traditional export, it effectively subsidized other exports moderately and gave a negative effective protection in the domestic market. The government also perused a balanced budget, which enabled the economy to benefit from international capital market.

Michaely (1991) summarized the World Bank's comparative study of trade liberalization polices in nineteen countries in the post war period. The conclusion he arrived at is the following. For countries that have been running restrictive trade policies for a long period, the initial strength of the liberalization is very important for the sustainability of the reform. Liberalization under an extreme pressure is more likely to be successful than that started under a normal condition. Also after taking an appropriate policy measures an engagement in multilateral agreement is important for the survival of the policy.

The study further argues that even under intensive liberalization there is no net negative effect on the level of employment, except in few cases. There is a positive relation between the performance of exports and the balance of payment; and also there is a strong association between failures of liberalization and decline in the foreign exchange reserve at the end of the

liberalization. The sustainability of the liberalization also depends on the nature of the real exchange rate, as there is a relationship between exchange rate and trade liberalization, implying that nominal devaluation followed by a restrictive fiscal policy is important for the sustainability of the reform. The experiences further indicate that the successful liberalizers are those which keep their budget deficit at the lowest level. The impact of liberalization, as mentioned above is the growth of GDP and exports, with the growth rate of the latter being higher than that of the former.

Evaluation of trade liberalization was also conducted in many countries in Africa. Most of the analyses were based on the methodological framework proposed by Greenaway, Collier and Gunning (1997). One of these is the study conducted on Maritutis. The country has undergone two liberalization episodes during the periods 1979-1985 and 1991-1994. Evaluation of the reforms carried out during these periods on the basis of both descriptive and econometric analyses shows that, although there were other factors that played a role, following liberalization there was an increase in GDP growth and quantity of exports. Analysis of the survey data on manufacturing firms for the period 1991-1994 also showed that firms engaged in exporting increased their capital intensity to face competition from the world market, but employ more workers than the non-exporting firms. The opening up of competition led to decrease in employment in the non-export firms.

The study conducted in Uganda by Fielding and Ssemogerer (1999) shows that the bulk of investment goes to the import substitution sector after implementation of the trade liberalization policy. Because of the shortage of data they, however, did not derive the overall

impact on employment and productivity, though they indicated that there was no marked increase in the quantity of export.

Gauthier (2001) using a firm level survey data conducted another study in Uganda. In the study he tried to see whether the reform program has brought growth in real output and increased the productivity of firms. Sector, ownership, size and the type of business they are engaged in are used to classify firms. The effects on the productivity of the firms were analyzed by constructing indices of labor productivity, total unit cost, total factor productivity and technical efficiency. The results show that following trade liberalization there has been a significant growth in real output and productivity. Export oriented firms showed more real output and productivity growth as compared to firms that produce for domestic market. The observed growth in export was from the operation of the existing firms instead of new entrants possibly due to the high start up costs faced by the new firms.

Tutu and Oduro (1999) conducted a similar study in Ghana. The study involved both descriptive and econometric technique and uses both time series and survey data (cross-sectional data) on manufacturing firms. The results indicate that except for textile firms, import competition is not a sever problem; manufacturing firms are characterized by low capacity utilization because of lack of demand and the shortage of credit (this was described as preventing firms from moving into exporting). Growth in the manufacturing sector was later shifted to the services sector. Though there is growth in the volume of export, due to deteriorating terms of trade and lack of diversification into more value added products, export earrings fall. As a result of the public sector retrenchment and low response of the private sector to the program employment also continued to fall.

As sighted in Gauthier (2001), Pack (1988: 353) conducted a study of the industrial sector and observed that there was no clear confirmation of the hypothesis that countries with external orientation benefit from greater growth in technical efficiency in the components of sector of the manufacturing. Owing to the inconsistent macroeconomic policies, weak infrastructure and institution, the SSA performance appears to be in line with this argument. Gauthier also sighted that Elbadaw, (1992); Matin (1992) argued even if economic reforms were credible and producers did respond to the new incentives, the resulting productivity gains could be offset by declines in factor accumulation. He also stated that Robert and Tybot (1997) found that differences in productivity with in an industry are typically greater in industries protected from international competition, suggesting that protection nurtures inefficiency. Other works conducted at the firm level, however, showed mixed results.

The trade regime in Ethiopia was characterized by protectionism both during the imperial and the military regimes, as mentioned above. Since 1991/1992, the government started to take measures to liberalize the trade regime.

Alem (1995) conducted a study on trade and trade related issues in Ethiopia. His findings are: more than 60 percent of the protection given to the import competing sectors was transferred to the production of the exportable goods as an implicit tax; trade policy has the strongest impact on the export sector through its impact on the availability of consumer goods; and government subsidy given to one export sector created disincentive to other export sector. The appreciation of the real exchange rate was also found as an important factor in affecting the production of tradable goods. A one percent policy- induced

overvaluation of the real exchange rate lead to a one percent fall in the relative price faced by exporters.

Alemu (1992) analyzed the efficiency of public manufacturing enterprises in Ethiopia by investigating their financial performance, allocative efficiency and technical (X-) efficiency. Financial performance (financial rate of return) was measured by taking the ratio of operating surplus to book value of fixed assets. The result indicated that the average financial rate of return for 1984/85 was about 20% and for 1987/88 was 26% for the concerned industries, but with a big dispersion in both periods.

A measure of allocative efficiency based on domestic resource cost showed that more than half of the sampled enterprises were allocatively efficient. However, there was a divergence between the results from the financial performance indicated above and the allocative efficiency, with some firms with positive financial profit exhibiting negative economic performance.

Except indicating the two possible sources of technical inefficiency in the public enterprises no empirical analysis was, however, made in this respect. Technical inefficiencies were said to have arisen from the then existing system, from the inter-enterprise difference in technical (X-) inefficiency, with the former mainly attributed to the organizational structure, which was characterized by a highly centralized decision making process.

Using different techniques Admit (1997) analyzed the technical progress of the manufacturing sector in Ethiopia for the period 1976-1995. He estimated the Cobb-Douglas,

CES and the trans log models to get the technical progress of the manufacturing sector. The rate of technical progress was also calculated by constructing different indices. The results indicated that total factor productivity of the manufacturing sector showed a non- increasing trend while the rate of technical progress was negative.

He also tried to see variation of total factor productivity across sectors and in fact observed that there was a variation. Total factor productivity increased for some sectors (tobacco, paper, plastic and leather) while it is either stagnant or declining in the other sectors. Production technique (measured by capital labor ratio), size of firms (in terms number of employees), import intensity, average incentive payments and nature of industries (whether they are heavy or light industries) are factors that explain the variation in total factor productivity. In all the analysis, the values of the variables were in nominal terms. The reason is due to the belief that proxy-deflating mechanism distorts the results worse than price movement in the context of Ethiopia manufacturing sector.

A technical efficiency analysis using the stochastic frontier model conducted on the privatized medium and large- scale manufacturing firms by Rebeka (2001) showed that except for those firms in the food sector the efficiency of other industries declined following the privatization of the public enterprises. The study was conducted on five manufacturing industries (food processing, beverage, chemicals and printing, non-metal and wood, and textile and leather).

It is also stated that the manufacturing sector has not depicted structural changes over a period of time. The manufacturing sector is characterized by limited contribution to GDP, lopsided distribution with respect to sector, ownership and region; no structural shift; deteriorating efficiency; weak linkage among themselves and with the other sectors (Befekadu and Berhanu, 1999/2000).

In general, in view to strengthen the performance of the manufacturing sector, and to bring an over all economic development, countries pursued different trade policies, ranging from the protectionist action since 1950s to the liberalizing measures that have taken place since 1980s. The major policy measures taken by the liberalizing countries include, among others, the removal of quantitative restriction (by converting to tariff), reduction of tariff rates and tariff dispersions, devaluing the domestic currencies and subsequent liberalization of the foreign exchange market. The implementation of these policies however varies from country to country, and the results obtained from the policy measures are also mixed. In some cases, there were an increase in real output, productivity and efficiency of the manufacturing sector following liberalization, while in other countries no substantial change has been observed. Lack of demand and credit were also observed to be hindrance for capacity utilization. It is also observed (for instance, in Uganda) that despite increase in exports investment in this sector is lower as compared to the import substitution sectors.

HAPTER THREE

METHDOLOGY, DATA SOURCE AND MEASURMENT

3.1 METHODOLOGY

The methodologies used in this study involve both descriptive and econometric techniques. Different indices are constructed to assess trade liberalization episode. Descriptive and econometric analyses are also applied to investigate the impacts on large and medium scale manufacturing industries due to change in the trade system and also to see the association between some indicators of liberalization and measures of productivity in the manufacturing sector.

Among others, responses of manufacturing industries to change in trade system are measured by looking at the trend of real output, and computing productivity of the sector. Four measures of productivity: labor productivity, unit cost of production, total factor productivity and technical efficiency will be derived and used to make productivity analysis. The detail of each is discussed below.

Total factor productivity equations

One of the important things in measuring the response of manufacturing industries to the change in a trade system is the analysis of the behavior of total factor productivity.

Factor productivity can be obtained in different ways. In most cases the growth accounting set by Abramovitz (1956) and Solow (1957) are used. In all cases TFP is predicted from an appropriate production function. In generating TFP, production function can be specified by using either the primal (where direct estimation of production function is made) or the dual approach (where a cost function is estimated), with the latter having some comparative advantage over the former. Due to lack of data on prices, in particular price of capital and price index for each sector in the manufacturing industry, the primal approach is used in this study.

In addition to econometric estimation, index numbers are also used to derive TFP. The different index numbers used in this regard have association with the underlying production function. For instance, the geometric index is exact for a Cobb Douglas production function, and the Tornqvist Thiel index, which is an approximation of the Divisa index, is exact for a homogenous translog production function (M. Capalbo and M. Antle, 1988).

Considering a production function of the form $Y_t = F(K_t, A_tL_t)$, which is based on the Solow growth model; where Y_t is output at time t; K_t is capital at time t; L_t is labor at time t and A_t is an exogenous factor that measures the effectiveness of labor (or it is the stock of knowledge), we can derive the following:

$$\dot{Y} = \frac{\partial Y}{\partial K}\dot{K} + \frac{\partial Y}{\partial L}\dot{L} + \frac{\partial Y}{\partial A}\dot{A}$$

This shows that the change in output overtime is the result of the change in capital, labor and the stock of knowledge.

Dividing both sides of the equation by Y gives:

$$\frac{\dot{Y}}{Y} = \frac{1}{Y}\frac{\partial Y}{\partial K}\dot{K} + \frac{1}{Y}\frac{\partial Y}{\partial L}\dot{L} + \frac{1}{Y}\frac{\partial Y}{\partial A}\dot{A}$$

This can be re- written as

$$\frac{\dot{Y}}{Y} = \frac{K}{Y}\frac{\partial Y}{\partial K}\frac{\dot{K}}{K} + \frac{L}{Y}\frac{\partial Y}{\partial L}\frac{\dot{L}}{L} + \frac{A}{Y}\frac{\partial Y}{\partial A}\frac{\dot{A}}{A}$$

This gives the following

$$\frac{\dot{Y}}{Y} = \beta_1\frac{\dot{K}}{K} + \beta_2\frac{\dot{L}}{L} + R_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.1)$$

R_t is known as the Solow residual or sometimes interpreted as the contribution of technical progress. It is the variable that measures total factor productivity. β_1 and β_2 are the elasticities of output with respect to capital and labor, respectively.

A plausible production function to the above representation is the Cobb-Douglas production function. The Cobb-Douglas representation of the above is given as

$Q_{it}=A_{it}L_{it}^{\beta}{}_1K_{it}^{\beta}{}_2\ldots\ldots\ldots\ldots\ldots\ldots(3.2)$

Where K is capital; L is labor; and A equals $e^{mt,}$ which is the measure o f total factor productivity.

Taking logarithm of both sides of the above equation the econometric representation is given as:

$$LnQ_{it} = LnA_{it} + \beta_1 LnL_{it} + \beta_2 LnKit + e_{it} \ldots\ldots\ldots\ldots (3.3)$$

Rearranging the equation gives the following:

$$LnA_{it} = LnQ_{it} - \beta_1 Ln_{it} - \beta_2 LnK_{it} \ldots\ldots\ldots\ldots .. (3.4)$$

The above type of technology is referred as labor augmenting or Harrod –neutral. According to Heathfield and Wibe (1987), Harrod neutrality implies a case where the technological progress leaves capital output ratio unchanged. There are also other types of technologies namely Hicks neutral and Solow neutral technologies. Hicks neutrality refers whether technical progress leaves factor ratios unchanged while Solow neutrality indicates a case where labor output ratio does not change as the result of technological progress. "With Cobb-Douglas production function labor augmenting, capital augmenting and Hicks neutral technological progresses are all essentially the same"(Romer 2001:12)

Other production functions such as the CES and the translog model can also be used to derive total factor productivity if the Cobb-Douglas production function does not characterize the production process. The translog specification is given as below:

$$LnQ_{it} = Ln\beta_o + \beta_1 LnL_{it} + \beta_2 LnK_{it} + \beta_{12} LnK_{it} LnL_{it} + \frac{1}{2}(\beta_{11} (LnL_{it})^2 + \beta_{22} (LnK_{it})^2) + \beta_3 t + \beta_4 t^2 + e_{it}$$

$$\ldots\ldots\ldots\ldots (3.5)$$

Where $\beta_3 t + \beta_4 t^2$ is measure of TFP. To derive TFP from the translog model Hicks neutrality is assumed.

In this study, TFP is generated using either the Cobb-Douglas or the translog specifications after an appropriate statistical test is conducted to choose the suitable model. After determining TFP, the next issue is the identification of the variables that affect it. The interest in this study is to see whether or not total factor productivity in the manufacturing industry is determined by some variables which are supposed to change with the change in the trade regime. Accordingly, the following equation will be estimated.

$$LnA_{it} = \alpha_o + \alpha_1 X_1 + \alpha_2 X_{2it} + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 D_1 + \alpha_7 D_2 + e_{it} \quad \ldots\ldots\ldots\ldots (3.6)$$

Where, X_1 is bias in the trade regime, measured by the ratio of the effective exchange rate of exports to effective exchange rate of imports (see A.1)

X_{2it} is import intensity of sector i at time t, measured by the ratio of imported raw materials to total raw materials.

X_3 is the Herfindhal-Hirschman index (HHI), measured on the basis of the number of firms in each sector (A.2).

X_4 is parallel market premium, measured as the ratio of the parallel market exchange rate to official exchange rate

X_5 is the logarithm of employment

D_1 is dummy variable, which takes a value of 1 if there was an export during the time of liberalization (1991/92) and zero otherwise.

D_2 is dummy variable for trade liberalization (regime dummy), taking a value of 1 after liberalization and zero before liberalization.

Bias in trade regime (X_1) is included as explanatory variable. This is on the assumption that devaluation of the domestic currency and subsequent adjustments in exchange rate policy together with tariff reduction are expected to increase effective exchange rate of exports

relative to effective exchange rate of imports, or equalize the two rates. Such adjustment is expected to encourage export orientation in the manufacturing sector, which, in turn, is expected to develop a sense of competitiveness and thereby increases productivity and efficiency.

Import intensity (X_2) is also used as one factor that explains productivity and efficiency in the manufacturing industry. This is on the assumption that liberalized trade system allows import of quality raw materials (intermediate goods) that increase the productivity and efficiency of the industry. It is argued that if research and development (R&D) expenditure create new intermediate goods, which are different or better from those already existing, in developed economies and if these goods are also exported to other economies (developing countries) then the importing countries productivity will increase through the R&D effort of its trade partner (Keller, 2000:18). The implication is, therefore, that the more trade is opened the more intermediate inputs (raw materials) will be imported for use by manufacturing firms and there is a possibility that productivity and efficiency will improve through technology transfer.

One of the ideas behind liberalizing a trade regime and taking subsequent measures like relaxing investment licensing is the argument that increased competition due to entry of new firms, among other things, leads to an increase in productivity and efficiency in the manufacturing sector. Competition in a given market can be measured by using the difference between prices and marginal costs. Different market concentration measures are also used to measure the degree of competitiveness of a given market. One of the most widely used concentration index in this regard is the Herfindahl-Hirschman index (HHI),

which also has a positive relationship with the price-cost margin stated above (Ferguson and Ferguson, 1994). Therefore, Whether or not the change in market competition (by entry of more firms) has some association with the productivity and efficiency of the manufacturing industry in Ethiopia is considered by including HHI (X_3) as one of the explanatory variables.

The fall in parallel market premium implies removal of foreign exchange controls and the availability of foreign currency in the official market after trade liberalization (due to in flow of aids and loans in the form of program support) and reduction in illegal trade. This helps manufacturing firms to obtain raw materials; spare parts, required capital investment goods and technical advices easily and timely; in turn, leading to an increase in productivity and efficiency of the sector. To see this effect parallel market premium is considered as one of the explanatory variables.

It is possible that the structure of employment changes in the manufacturing industry due to a host of factors following trade liberalization. Therefore, whether or not the change in size of the concerned sector has an implication on productivity, logarithm of employment is introduced as an explanatory variable.

Trade liberalization opens a door for domestic producers to compete in international market and this is expected to increase their productivity. Exporters earn from their contacts in the export market and as a result they adopt better production methods and achieve higher productivity (Bee Yan Aw et al, 2000). To capture this effect an export dummy (D_1) is introduced in the model.

Equation for technical efficiency

The other important thing in evaluating the response of the manufacturing industries is the determination of their technical efficiency.

The idea of measuring technical efficiency is attributed to Farrell (1957), who proposed that a production function be estimated from the sample data using either a non-parametric piece-wise linear technology or a parametric function. Following his argument two approaches of measuring technical efficiency- the data envelopment analysis (DEA) and the stochastic frontier model- come to the front (Coelli, Rao and Battese, 1997: 185). DAE involves the use of linear programming and it does not impose restrictive assumption on the functional relationship of the data, whereas the stochastic frontier model involves the use of econometric method and imposes a restrictive assumption on the functional relationship representing the technology and the distribution of the error terms.

Aigner and Chu (1968) estimated a parametric production function based on the Cobb-Douglas form as follows.

$Ln(Y_i) = X_i\beta_i - U_i$, where

X_i is a (K+1) row vector whose first element is "1" and the remaining elements are logarithms of K- inputs measured for firm i.

β_i is K+1 column vector of unknown parameters to be estimated

U_i, is a non- negative random variable associated with technical inefficiency in the production of firms in the industry involved.

The technical efficiency (TE_i) is then given by the ratio of the observed output of the i^{th} firm relative to the potential output defined by the frontier function, i.e.

$$TE_i = \frac{Y_i}{\exp(X_i\beta_i)} = \frac{\exp(X_i\beta_i - U_i)}{\exp(X_i\beta_i)} = \exp(-U_i)$$

The problem of this deterministic model is that it does not take account of other variables like measurement errors, which can influence the frontier.

As a remedy to the above problem, in addition to the efforts made by other scholars, Aigner, Lovel and Schmidt (1977) and Meeusen and Van de Broeck (1977) independently proposed a stochastic frontier model, which is represented as follows:

$Ln(Y_i) = X_i\beta + V_i - U_i \quad i=1,2,3,\ldots\ldots N.$

In this representation, the random error term V_i takes account of the impact of measurement error and other random factors such as weather, strike, luck, etc on the value of output together with the combined effect of unspecified input variables in the production function, where U_i, as stated above, is associated with technical inefficiency in production of firms (industry); V_i is independently identically distributed with mean zero and variance σ^2. It can take a positive or negative value.

U_i is also independently identically distributed exponentially or half normal with mean μ_i and variance σ^2.

It is clear that this model is a stochastic frontier production since the output values are bounded above by the stochastic variable exp ($X_i\beta + V_i$). The limitation of the model is that

there is generally no a priori justification for the selection of any particular distributional form for the U_i

In practice the Cobb-Douglas and translog production function are mostly used to derive technical efficiency. In this study, too, either of the models will be used after an appropriate test is conducted as to their fitness to the data. The specification of each model is given below

$$LnY_{it} = \beta_{it} + \beta_1 LnL_{it} + \beta_2 LnK_{it} + V_{it} - U_{it} \ldots\ldots\ldots\ldots\ldots\ldots 3.7$$

Represents the Cobb-Douglas stochastic frontier production function.

Where, Y_{it} is the observed value of out put of sector i at time t; L_{it} is total value of employment (labor) of sector i at time t; K_{it} is capita of sector i at time t; β_i is a vector of technology parameter to be established; V_{it} is the statistical noise; U_{it} is technical inefficiency.

The translog stochastic frontier model is given as of sector i at time t

$$LnY_{it} = Ln\beta_o + \beta_1 LnL_{it} + \beta_2 LnK_{it} + \beta_{12} LnK_{it} LnL_{it} + \frac{1}{2}(\beta_{11}(LnL_{it})^2 + \beta_{22}(LnK_{it})^2) + V_{it} - U_{it} \ldots\ldots\ldots 3.8$$

As explained under TFP analysis above, in this case too the interest is to see whether technical efficiency of the manufacturing sector is related to some variables that change with the change in the trade system. Accordingly, equation of the determinants of technical efficiency is given as follows:

$$\mu_{it} = \alpha_o + \alpha_1 X_1 + \alpha_2 X_{2it} + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 D_1 + \alpha_7 D_2 + e_{it} \ldots\ldots\ldots\ldots (3.9)$$

Whereμ_{it} is technical efficiency and explanatory variables have the same definition as what stated under equation 3.6. The justification for including these variables as regressors in the technical efficiency equation, and their expected signs are also similar to what stated under equation 3.6.

Labor productivity equation

Labor productivity is measured as the logarithm of output per employee at constant 1995/96 prices. Equation that associates labor productivity to indicators of trade liberalization is given as below:

$$LP_{it}= \alpha_o +\alpha_1 X_1 + \alpha_2 X_{2it} + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 D_1 + \alpha_7 D_2 + e_{it} \quad \text{.....3.10}$$

Where LP_{it} is labor productivity of sector i at time t, measured as logarithm of output per employee and the definitions of the regrossors are similar to what explained under equation 3.6

Equation for unit cost of production

Unit cost of production is given by the sum of the cost of capital (depreciation), wage and raw material costs divided by the value of gross out put. Equation that associates unit cost of production to indicators of trade liberalization is given below

$$UC_{it}= \alpha_o +\alpha_1 X_1 + \alpha_2 X_{2it} + \alpha_3 X_3 + \alpha_4 X_4 + \alpha_5 X_5 + \alpha_6 D_1 + \alpha_7 D_2 + e_{it} \quad \text{.....3.11}$$

Where UC_{it} is the ratio of the logarithm of depreciation, wage and raw material costs divided by gross value of output of sector i at time t and explanatory variables have the same definition as what explained under equation 3.6

Equation 3.5 is estimated using fixed effects model, while equations 3.6, 3.9, 3.10 and 3.11 are estimated using the random effects GLS estimation after an appropriate test. Equation 3.8 is estimated using the maximum likelihood estimation.

3.2 DATA SOURCE

A secondary data source from the publication of different organizations is used in conducting the study. The National Bank of Ethiopia, the Central Statistical authority, Ministry of Finance and Economic Development, Ministry of Trade, Industry and Tourism, and the Customs Office are some of the major data sources. International publications like the IFS yearbook; the World Bank African Development Indicators are also used.

3.3 MEASURMENT

Having the relevant models the important issue is the identification of the variables used in estimating the production function. That is we need to define how to measure output, labor and capital in particular.

Since it is difficult to get an aggregation of physical output and the physical measurement does not take account of the quality difference between two outputs, the value of output is used for the purpose of this study.

There is a debate whether to use a man-year (which measures the stock available for production), man-hour (which measures the time in which stocks are available for production) or wages (which measures a compensation to the flow of services) to measure labor. Using man-year has limitation since it only measures the number of employees, but does not take account of inter-seasonal variations of employment. Since an hour of labor is not equally productive across age, sex, ability, education, experience etc, it is also difficult to use man-hour as a measure of labor. Therefore, the easiest and relatively better way of measuring labor is to use wages and the same is done in this paper.

In most empirical research, capital represents fixed assets used in the production process. In measuring capital by fixed assets the issue that arises is whether to use a gross value of the assets or net values (i.e. excluding depreciation). The debate arises due to the fact that accounting depreciation does not properly reflect the decline in the value of capital and in some cases there is no as such a material change in the value of the assets. However, in this paper the net book- value of capital (existing capital less depreciation and deduction during the period plus addition to fixed assets over the same period) is used in measuring capital.

To convert variables in to real each of them are deflated by consumer price index in which1995/96 is taken as the base year.

HAPTER FOUR

TRADE REFORM MEASURES AND INDICATORS IN ETHIOPIA

4.1 TRADE REFORM MEASURES

In view to strengthen industrialization and to transform the economy to the socialist system, Ethiopia had restricted its international trade until the coming to power of EPRDF in 1991/92. Exchange rate was administratively kept fixed; an exorbitant tariff rate and trade licensing were used to control imports. Capital ceiling was in place to control participation of the private sector. The result of these policies, among others, was fall in GDP growth, deterioration in the balance of payment position and etc

To reverse the situation the new government (led by EPRDF) has taken different policy measures, which are supposed to liberalize the trade system. The major trade and exchange rate related policy measures taken since1991/92 are presented in Table A Review of some relevant policy measures that need extended discussion are also presented below

4.1.1 TADE LICENSING

One of the areas that deserve investigation in analyzing trade liberalization is the efficiency in the issuance of trade licenses, in particular import licenses. It is argued that to facilitate trade the formalities and the documentation required for both export and import licensing be kept at minimum. In this respect it is suggested that import-licensing procedure should not impede the flow of trade and should be implemented in a transparent and predictable manner.

It is also stated that governments should observe strict time limits in notifying changes in their licensing procedures (UNCTAD, 1999:103).

WTO rules also state that the applicant for a license should not approach at maximum more than three offices, and import licenses be issued in thirty days when the service is provided on the first come is first served basis and within sixty days if the service is provided simultaneously.

Before the promulgation of proclamation No 67/1997, there were different regulations and proclamation (most of them issued during the Imperial regime) governing the issuance of both domestic and foreign trade licenses in Ethiopia. Proclamation No 293/1971 was the one used for foreign trade for a long period of time. The objective of this proclamation was stated as to promote exports and regulate imports so as to achieve a healthy economic and balanced international trade, implying that trade licensing was one of the instruments used in controlling imports.

During the Imperial Regime all licenses were issued by the then Ministry of Commerce, Industry and Tourism. The Ministry was also given the authority to regulate (limit) the number of each type of licenses to be granted for any specific class or classes of goods or services, for any particular manner of trade, for any particular period of time or for operation in any particular localities. This shows that the licensing system was highly centralized so as to control trade. Regulation No 109/1987 issued under the latter regime (Derge), however, states that a local registry can give domestic trade license.

License fees did not appear to be a barrier to obtain trade license at least when compared with the initial capital needed to engage in foreign trade. Exporters were required to pay Birr 75.00 and importers Birr 150.00. If the holders failed to renew trade licenses and violate certain laws their licenses will be cancelled.

The new proclamation (issued in connection with trade liberalization measure) regarding trade licensing (both foreign and domestic) is proclamation No 67/1997.This proclamation dictates, like the preceding regulations and proclamations, that any person is required to register and obtain a trade license before engaged in any business activity. It gives regional governments the authority, by taking in to account the objective condition of the locality, to exempt small-scale businesspersons from the obligation to obtain a license by setting a floor price. Practically, to participate in any commercial activity with a capital of Birr 5000.00 and above it is mandatory to obtain a business license.

Registration and license fees are charged on the basis of the registered capital of the business. The minimum fee paid to obtain the principal registration certificate is Birr 5 and the maximum is Birr 100. For the business license, the minimum fee is Birr 25 and the maximum is Birr 200.00.

There are two types of licenses that are issued in the area of foreign trade: specific and general licenses. Licenses for foreign trade are obtained only from Ministry of Trade, Industry and Tourism at the Federal level, while the Regional industry and Tourism Bureaus, except for some type of business activities that require special approval by the sector institutions, can license other domestic trade. Regulation No 13/1997of the Councils of

Ministries states that up on the fulfillment of the required document by the businessman, licenses are issued within five business days. Renewal of trade license is within six months time since the entry of the fiscal year. Failure to renew licenses in the specified time lead to cancellation, in which case a new license can be obtained only after one year from the day of cancellation by making a payment which is twice the regular fee charged for a new trade license.

In general, compared to the preceding situations it is possible to say that import licensing is less restrictive in Ethiopia. The number of offices a businessman is required to contact is limited and that both registration and license fees are minimal. The fact that all licensing related issues are included in one proclamation (proclamation No 67/1997) also makes the system transparent. The only exception that appears is the case where failure to renew licenses in the specified time lead to cancellation of the license, in which case new license can be obtained only one year after the date of expiry.

4.1.2 EXPORT PROMOTION AND FOREIGN EXCHANGE RELATED POLICIES

In liberalizing trade, one of the main objectives is promotion of the export sector. In this respect, too, the Ethiopian government has made some progresses. Development of the export sector is considered to be based on the country's resource endowment and comparative advantage. Four main lines that have been set to develop the export sector are:

i. Improving productivity and expanding the cultivation of unused land- this is to promote export of the existing agricultural products;

ii. Using natural resources of high value agricultural products

iii. Opening new basis of exports of manufactured goods

iv. Discovering and exploiting exportable minerals

To follow-up the stated objectives and encourage the export sector, Ethiopian Export Promotion Agency was established in 1998 as an independent organ, replacing an organization known as the Ethiopian Trade Point. It is given an authority to carry out different tasks considered to be relevant in the promotion and development of the export sector, including offering training to the exporters and engaging in promotional campaigns. Different incentives like the duty drawback, export retention and export credit guarantee schemes are also offered to exporters. The duty draw back scheme has two arrangements: exempting from duty enterprises that export all their out put and refunding of those who make partial exports. However, it appears that the use of such facility is limited. There is also a plan to introduce other incentives like the voucher scheme, bonded manufacturing warehouse, pre and post shipment credit facility in the near future. To encourage exporters and the inflow of foreign exchange, the exchange commission on incoming foreign transaction was also removed.

As a package to liberalize trade and promote exports, subsequent measures were also taken to liberalize the foreign exchange market. Series of measures taken in this respect include: devaluation of the foreign exchange rate from Birr 2.07 to Birr 5.00 against the US dollar; the introduction of a bi-weekly and weekly foreign exchange auction; the transfer of granting foreign exchange permit for imports and other related services to commercial banks with

subsequent introduction of a weekly wholesale foreign exchange auction, which is recently replaced by an inter- bank foreign exchange market. Parallel to foreign exchange market liberalization, the negative list of items for which foreign exchange is made available has been reduced. Except for purchase of used clothes and those goods that were included in the negative list, currently banks extend foreign exchange to all licensed importers.

Despite the gradual efforts to liberalize the foreign exchange market, however, restrictions emerged during the Ethio-Ertrian war. The National Bank of Ethiopia restricted the amount of foreign exchange that can be approved by each commercial bank. For instance, it was set that the board of Commercial Bank of Ethiopia approves foreign exchange to import goods that worth above USD 500,000, while for the private banks the NBE approves foreign exchange in excess of the stated amount. At the same time additional requirements were set for importers to fulfill. Except in the case of import of fertilizers, petroleum, pharmaceuticals, motor vehicles used for public transport and other special purposes (like aircraft), and capital goods exempted from duty and tax by the Ethiopian Investment Authority, all importers were required to make a one hundred percent deposit of the value of the goods before lodging import application.

4.1.3 TARIFF STRUCTURE

Trade liberalization mainly involves adjustment of trade policies (like tariff, quota). Trade policy reforms could vary from country to country based on the initial protection, prospects for sustainability and political conditions (Greenaway and Milner, 1993:291). This implies that trade policy reform is not uniform across the board, and what determines the measure to

be taken is the specific condition of a country. Experiences of the reforming countries show that most of the measures taken involve replacing quotas with an equivalent tariff, reducing the level of tariff and minimizing the tariff dispersion. The tariff reform it self takes two forms: reducing all tariff rates by the same proportion of their initial ad-valorem value (the radial contraction method), or reducing at each stage of tariff reform the highest rate to the second highest (concertina method) (Knee, Ligthart and Bristow, 1998), with the latter approach having the advantage of simplified administration.

Before the implementation of the first round tariff revision in 1993, a glance at the Ethiopia's tariff structure exhibits that out of the total imports 73% of the goods were subjected to an ad-valorem rate ranging from 5% to 230%; 9% of the goods were subjected to specific tax while 18% were allowed to be imported duty free. The tariff band was about twenty-four.

Since 1993 the government has taken five round tariff revisions and the sixth round is currently under study. As one of the objectives of tariff revision is the provision of appropriate effective protection to the domestic manufacturing sector, two of the already implemented tariff reforms (round two of 1995 and round five of 1998) were made on the basis of the study conducted on effective rate of protection given to the existing different manufacturing sectors. Preliminary works show that the forthcoming sixth round tariff revision is also going to be based on a study conducted on the manufacturing sectors so as to asses the effective protection to be provided to the sector. The different structure of tariffs following each successive round tariff revision is given in table 1:

Table1: Different tariff structures following each successive rounds of tariff revision

Description	1993	1995	1996	1998	Last Round (under study)
No of goods	5332	5297	5486	5426	5552
% Of goods on which advalorem is paid	97.3%	97.3%	96.83%	96.98%	95.32%
Minimum tariff rate	5%	5%	5%	5%	5%
Maximum tariff rate	80%	60%	50%	40%	40%
Tariff band	9	8	7	6	7
Weighted average tariff rate	29.6	24.4	21.5	19.5	18.5
Tariff dispersion (range)	75	55	45	35	35
% Of duty free goods	2.6%	2.59	3.06%	2.93	2.87
No of goods on which specific duty paid	3	3	3	3	3
Prohibited goods	2	2	2	0	2

Source: Ministry of Finance different publications on tariff revision

Table 1 shows that the basic tariff revision approach used by the government is the concertina approach. Except under round six, where the maximum tariff is expected to be kept at 40% as the preceding round. In all other cases the maximum tariff, the weighted average and tariff dispersions were reduced at each stage. By looking at the above figures one can, therefore, say that the country has been gradually reducing the restrictedness of its trade regime. However, it is argued that it is difficult to assess the restrictedness of the trade system by just looking at the weighted average of tariffs.

> One cannot infer restrictedness simply from the pattern of statutory tariff rates. It is insufficient to look at the simple average of rates or the average of rates weighted by the number of items subject to each rate. Neither the simple nor weighted average takes account of the value of the actual or potential trade to which any statutory rate may apply. Cutting the rate on those goods that are not imported can minimize the weighted average. (Keen, Ligthart and Bristow, 1998)

The authors therefore argued that the simplest way to see whether the tariff structure has been reduced or not is by seeing the ratio of tariff revenue to the volume of imports. If there is an actual reduction in tariff, this ratio is expected to decline. The ratio is computed and the result

is presented in table 2. Except for 1996/97, the ratio of tariff revenue to import volume has shown a relative decline after the trade reform, implying a gradual reduction in restrictedness of the trade system.

4.2 QUANTITATIVE INDICATORS OF TRADE LIBERALIZATION

A liberalized trade system may be described as one in which tariffs rather than quantitative restrictions are the major instruments of trade intervention; there is a reduction in the level and dispersion of average import tariff rates; and export incentives are improved (Tutu and Oduro, 1997). The indicators that are often used to measure these situations are bias in the trade regime (measured by the ratio of effective exchange rate of exports to effective exchange rate of imports), parallel market premium, trade intensity coefficient and the ratio of tariff revenue to import volume.

Table 2: Indicators of trade liberalization in Ethiopia

Year	Trade intensity*	Ratio of imports to GDP	Ratio of export to GDP	Parallel premium	Tariff/volimp*	EERX/EERM
1987/88	20.46	15.19	5.26	2.66	5.21	0.105
1988/89	19.24	13.41	5.83	2.75	4.59	0.096
1989/90	15.34	10.84	4.50	2.92	8.45	0.097
1990/91	14.08	11.10	2.98	3.22	7.12	0.111
1991/92	10.24	8.71	1.54	4.61	7.94	0.103
1992/93	17.13	13.57	3.56	1.76	3.31	0.442
1993/94	21.74	16.73	5.01	1.24	5.02	0.378
1994/95	27.69	19.32	8.37	1.19	4.06	0.870
1995/96	30.23	23.36	6.87	1.17	7.14	1.000
1996/97	29.90	20.51	9.39	1.06	18.43	0.948
1997/98	29.93	20.74	9.20	1.02	5.51	0.914
1998/99	31.65	24.15	7.51	0.99	3.30	2.016
1999/2000	33.06	25.40	7.66	1.02	4.48	1.206

Source: own computation

**Trade intensity coefficient is the ratio of the sum of imports and exports to GDP*

**volimp is volume of import*

Devaluation of nominal exchange rate accompanied by the removal of other trade barriers like trade licensing and tariff reduction, and the subsequent inflow of foreign exchange in support of the liberalization program lead to a shift of the illegal trade (smuggling) to the official channel. As a result there is a fall in the demand for foreign exchange in the parallel market and hence a fall in the parallel premium. Following the liberalization measures taken after 1991/1992, the parallel premium (measured as the ratio of the parallel exchange rate to the official exchange rate) has exhibited a declining trend as compared to what existed in the late 1980s(Table 2).

Exchange rate adjustment followed by a reduction in tariff rates could either decrease the relative price of imports as compared to the relative price of exports or may lead to a neutral situation (where the relative prices are equal). The net effect of these measures is to increase the effective exchange rate of exports as compared to that of imports i.e. the bias against exports declined. Table 2 shows that the ratio of effective exchange rate of exports to imports depicted a gradual increase right after 1992/1993, implying that the bias against exports has been decreasing over time as there is a change in exchange rates and reduction in the tariff rates.

In flow of foreign currency from donors and multilateral institutions in support of the liberalization measures and increase in export earnings are expected to boost imports. Policy measures, like devaluation by at least re-channeling the unofficial export to official market lead to an increase in exports. These effects are in turn expected to increase the trade intensity coefficient. A glance at table 2 indicates the same result. The ratio of import to GDP (column three) and the ratio of export to GDP (column four) have increased since 1992/93. Similarly, the trade intensity coefficient (measured by the ratio of the sum of exports and imports to GDP) has exhibited a rising trend over the same period.

In general, the quantitative measures show that trade restrictedness in Ethiopia has gradually been improved after 1991/92.

CHAPTER FIVE

REVIEW OF THE MANUFACTURING SECTOR

Development of the manufacturing sector in Ethiopia went back to the establishment of strong central government at the end of the 19th centaury. However, a deliberate attempt to develop industrialization through import substitution strategy started only after 1950s. Until then there was no apparent deliberate industrial development strategy in the country. Until the fall of the imperial regime in 1974, most of the manufacturing industries were in private hands (in which foreigners had the dominant share). Following the 1974 revolution, however, the government confiscated almost all the medium and large-scale manufacturing industries and became the major owner in the sector. With the change in government and policy direction, after 1991/92, the role of both domestic and foreign private sector has got attention again. To this effect, different policy measures like privatization of government owned enterprises and promulgation of new investment code (with subsequent revisions) have been made

Despite different strategies taken by different governments it is, however, argued that the performance of the manufacturing industry has been characterized by slower growth and stagnation in some cases.

This section deals with investigating the performance of the manufacturing sector in terms of real output, value added, sales, investment expenditure, size of firms and employment. The data used for the analysis is obtained from the survey conducted by the Central Statistical Authority on large and medium scale manufacturing industries. The analysis concentrates on the performance of the manufacturing sector during the period 1982/83-1999/2000. The

period 1982/83-1990/91 is referred as the pre reform period and the period 1991/92-1999/2000 as the post reform. In addition, to make an equal comparison, the analysis focuses on fourteen sectors, out of fifteen, for which the data is fully available over the stated period.

Definitions of the terms used in the analysis are given in box 1. The definitions are taken from the publication of Central Statistical Authority on medium and large-scale manufacturing industries.

Box 1: Definition of important variables

Gross value of production: this refers to the sales value of all products of the establishment, the net change between the beginning and end of the reference period in the value of finished goods and the value of work in progress, the value of industrial services rendered to others, the value of goods bought and resold without any transformation or processing, and other receipts. The valuation of gross value of production is in terms of producer's value where indirect taxes are included in the value of sales of the establishment and the value of subsidies received is excluded.

Raw materials: this includes an auxiliary material, parts and containers, which are consumed during the reference year. The value of local raw material is the value of locally produced raw materials and is the cost at factory, which includes the purchase price, transport charges, taxes, and other indirect costs. The value of imported raw material is the value of raw materials produced in other countries and obtained directly or from local sources and is the cost at factory that includes the purchase price, transport charges, taxes and other incidental costs.

Number of employees: it includes all persons on the payroll whether seasonal or temporary workers. The number of seasonal and temporary works has been adjusted to give equivalent of full time workers.

Wages and salaries: this refers to all payments in cash or in kind made to employees during the reference year. **Revenue from sales**: this refers to the total sales value of all products and by- products during the reference year valued at market price.

Industrial Cost: includes the cost of raw material, fuel, and other supplies consumed, cost of industrial services rendered by others, cost of goods bought and resold with out any transformation or processing and cost of electricity consumed

Non-Industrial Cost: includes payment like professional fee, postage, telephone, insurance, advertising, hired transport, rental payment, etc (depreciation is excluded).

Value added at market price: this is the difference between the gross value of production and industrial and non-industrial costs. To get the same indicator at factor cost net indirect taxes (indirect tax less subsidy) are subtracted.

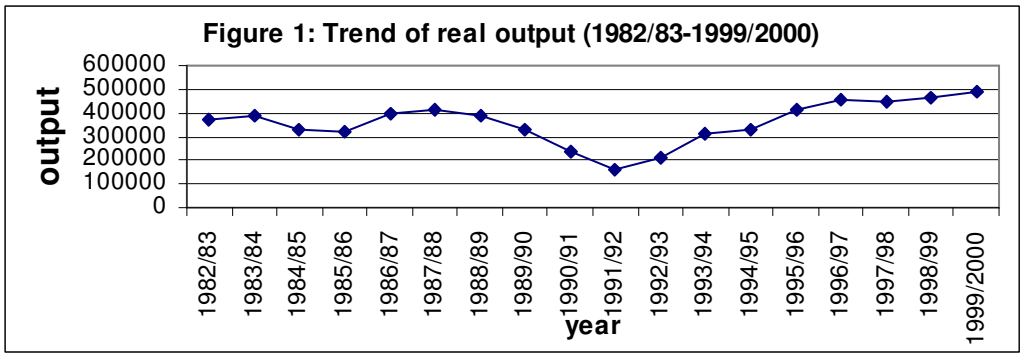
Fixed Assets are those with productive life of one year or more which are intended for the use of the establishment including fixed assets made by the establishment's own labor force for its own use. The value of the fixed assets includes the net book value at the beginning of the period plus new capital expenditure less those sold and disposed during the reference year.

New Capita Expenditure: is cost of new or used capital equipment bought during the year

5.1 REAL OUTPUT

The average share of gross output of the large and medium scale manufacturing industries in the gross domestic product amounted 4.55% during the period1982/83- 1999/2000. Classifying this period in to different phases show that the contribution of the manufacturing sector to GDP rather declined over time. It declined from 5.4% during 1982/83-1990/91 to 4.23% during 1991/92-1999/2000.

Time series of real output over the whole period (1982/83 – 1999/2000) exhibits that production of the manufacturing sector gradually declined before the reform and reached the minimum amount (Birr 157,749 thousand) during 1991/92. After the reform the trend is, however, reversed and production depicted a gradual increase.



In terms of growth, industrial output raised on average by 6.6% during1982/83 – 1999/2000. On average output declined by about 2.8% in the periods before the reform and grew by about 16% in the post reform period.

Table 3: Growth of manufacturing output

Year	Growth	Year	Growth
1982/83	2.29	1991/92	-30.55
1983/84	7.36	1992/93	52.82
1984/85	-11.94	1993/94	71.78
1985/86	-5.28	1994/95	-1.90
1986/87	26.42	1995/96	50.27
1987/88	3.11	1996/97	10.37
1988/89	-9.57	1997/98	-9.88
1989/90	-10.32	1998/99	-2.58
1990/91	-27.56	1999/2000	4.82
Average	-2.83	Average	16.13

Source: own computation

In addition to the above simple growth average, the time trend (growth) of real output can also be seen using the following relationship

$$\text{Ln } Y_{it} = \alpha_o + \alpha_1 t$$

Where Ln Y_{it} is logarithm of real output and t is time.

In this specification, the coefficients of time (α_1) is considered to measure the change in real output overtime. Hence, it takes a negative value if there is a decline in real out put and a positive value if

there is an increase in real output. A separate estimation of the above relationship is made for each period (periods before and after the reform) using panel data on real output, and the results are given in table 4 for the pre-reform period and in table 5 for the post-reform period.

Table 4: Trend of manufacturing output in the pre-reform

Random-effects GLS regression			Number of obs	= 126
Group variable (i): id			Number of groups	= 14
R-sq: within	= 0.1286		Obs per group: min	= 8
Between	= 0.0008		Wald chi2 (1)	= 16.52
Overall	= 0.0037		Prob > chi2	= 0.0000
Random effects u_i ~ Gaussian				
Variable	Coefficient.	Std. Err.	Z	P>|z|
Time	-0.032	0 .008	-4.064	0.000
Cons	74.741	15.452	4.837	0.000

Table 5: Trend of manufacturing output in the post-reform

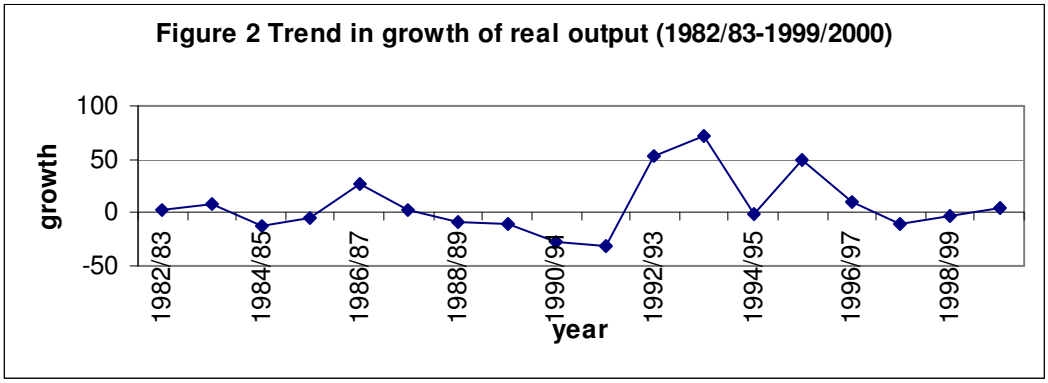
. Random-effects GLS regression			Number of obs	= 126
Group variable (i): id			Number of groups	=14
R-sq: within	= 0.4033		Wald chi2 (1)	= 75.01
			Prob > chi2	= 0.0000
Overall	= 0.0518			
Random effects u_i ~ Gaussian				
Variable	Coefficient.	Std. Err.	Z	P>|z|
Time	0.122	0 .014	8.661	0.000
Cons	-229.897	27.937	-8.229	0.000

As indicated in table 4, for periods before the reform the coefficient of time (α_1) is negative, implying that there was a decline in real output over that period. Table 5, however, shows that the coefficient of time is positive for the periods after the reform, indicating that there was an increase in real output.

One issue that arise in discussing the trend of real output is whether or no it exhibited a sustained growth over time. Analysis made in this respect shows that though there was a decline in an average manufacturing real output before the reform and an increase in the post reform period, these features are mainly attributed to certain time periods rather than being the whole period phenomenon.

The negative growth of industrial output registered in the pre-reform period was mainly due to the slow performances registered after 1988/89. By 1991/92, the growth of industrial output reached the minimum level (-30.5%) ever registered in the study period. Similarly, significant growth (taking the preceding years as base) registered in the post reform period is mainly attributed to the growth performances observed during the beginning of the trade reform, particularly in 1992/93 and 1993/94. But this trend does not persist overtime. Manufacturing output declined in 1995/96 and increased in the following year and again continuously decline for three consecutive years. This shows that the growth in manufacturing output registered after the reform are mainly due to the changes that occurred during the beginning of the reform rather than the whole period phenomenon.

Figure 2 Trend in growth of real output (1982/83-1999/2000)



It is argued that the positive responses of the industrial output that observed after the change in trade regime, was mainly due to a host of factors such as the availability of raw materials, spare parts which were not easily available during the preceding period due to scarce foreign exchange. It appears that this argument has a valid ground, as the majority of the sectors in the manufacturing industry are dependent on imported raw materials. For instance, for the fourteen sectors considered in this analysis, imported raw material on average account for about 57% of the total raw material consumed. A look at the time trend of this input, however, depict that it sharply declined during

1989/90 to 1991/92 and sharply increased in the subsequent period (after reform), exhibiting the close association it has with the output of the manufacturing sector.

The validity of the argument that it was the availability of imported raw materials that strongly determined the decline in real output in the pre reform period and the increases observed then after, can be simply seen by looking at the magnitude of the elasticity of imported raw material in the following specification.

$$\text{Ln } Y_{it} = \alpha_o + \alpha_1 \text{Ln } W_{it} + \alpha_2 \text{LnK}_{it} + \alpha_3 \text{LnLR}_{it} + \alpha_4 \text{LnIR}_{it} + \alpha_5 t + \alpha_6 Du$$

Where $\text{Ln}Y_{it}$ is natural logarithm of output; LnW_{it} is natural logarithm wage; LnK_{it} natural logarithm of capital; LnLR_{it} is natural logarithm of local raw material; LnIR_{it} is natural logarithm of imported raw material, t is time and Du is regime dummy which takes a value of 1 for the period after 1991/92 and zero otherwise. The results of the above specification are given in table 6 as below:

Table 6: Elasticity of imported raw material in production

Random-effects GLS regression — Number of obs = 240

Group variable (i): id — Number of groups = 15

R-sq: within = 0.8400 — Wald chi2 (6) = 1331.34

Between = 0.9400 — Prob > chi2 = 0.00

Overall = 0.9258

Random effects u_i ~ Gaussian

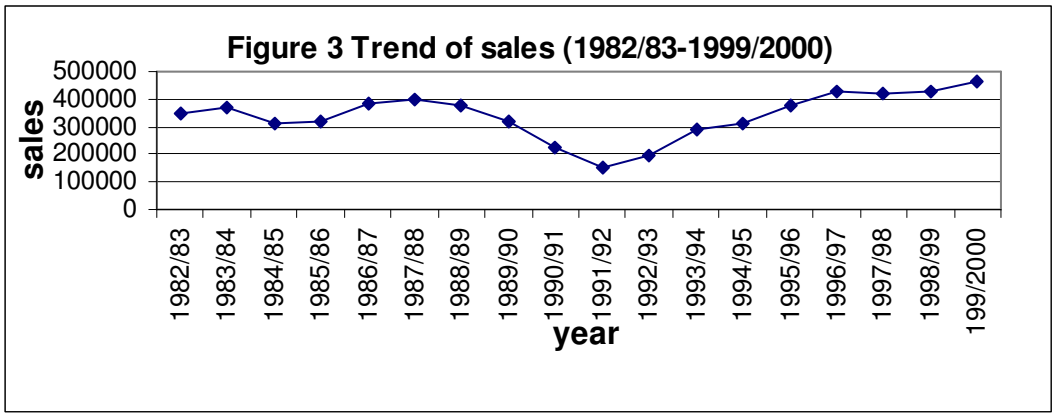
Variable	Coefficient	Standard error	Z	P/z/
LnW	0.187	0.063	2.962	0.003
LnK	0.040	0.022	1.808	0.071
LnLr	0.281	0.029	9.797	0.000
LnIr	0.543	0.031	17.454	0.000
Du	0.056	0.056	0.991	0.321
T	-0.007	0.007	-1.006	0.314
Cons	1.367	0.450	3.039	0.002

As can be seen from table 6, imported raw material is significant and positively related to real output. The output elasticity of imported raw material is even higher than that of the other explanatory variables in the model. This implies that in the situation where the manufacturing industries cannot get imported raw materials the adverse impact on the production is very high. Therefore, it is possible to say that the decline in manufacturing output observed in the pre reform and the sharp increase observed immediately in the post reform is mainly due to the availability of raw materials (imported).

Considering the contribution of different sectors depicts that few sectors are dominant in terms of real output. For instance, three sectors-food and beverage, textile and leather - account for about 42%, 14% and 9%, respectively, of the total manufacturing production during1982/83 to1999/2000. This situation depicts only a minor change when we compare the post and pre reform periods separately. Before the reform the share amounted 44%, 16% and 7.5%, respectively, while in the post reform it has changed to 40%, 11% and 10%, respectively, for the three sectors (Table A3).

5.2 SALES

The sales of the manufacturing industries on average declined to the minimum level during 1991/92 and rose after that just like the trend of real output. Considering the period 1982/83-1999/2000, sales grow on average by 5.8%. However, a separate look at the pre and post reform periods shows that there is a difference in growth of sales. On average, sales of the manufacturing sector declined by about 2.3% in the pre reform period, while it increased by about 14% in the post reform (Table A4).



Comparing the position of each sector in terms of sales depicts that food and beverages, textile and leather sectors are the dominant over the whole period. The average share of food and beverages and textile sectors, however, showed a minor decline in the post reform as compared to the pre reform period, while the share of leather sector has depicted an increase. For instance, the share of food and beverages sector moved down from 43.6% before the reform to 41.5%, while that of the textile sector declined from 16.5% to 11%(Table A5).

In analyzing the sales of the manufacturing sector, the important thing that worth discussion is the share of exports sales in the total. Export sales account for 13.5% of the total sales during 1982/83-1999/2000. Decomposing this period in to pre and post reform times shows that there is a slight decline in the export sales during the latter period. On average export sales account for 14% of the total sales of the manufacturing sector before the reform and 13% after the reform. The data further shows that the fall in the manufactured export observed in the post reform is mainly attributed to the slow performance after 1995/96. As can be seen from table 7, for instance, the average share of manufacturing export in the total

sales amounted about 7% during 1995/96 to 1999/2000, while the total average after the reform is about 13%.

Table 7: Percentage share of export sales in total sales

Year	Ratio	Year	Ratio
1982/83	8.12	1991/92	13.42
1983/84	11.19	1992/93	21.97
1984/85	10.05	1993/94	21.38
1985/86	11.96	1994/95	25.90
1986/87	13.70	1995/96	7.59
1987/88	17.20	1996/97	7.95
1988/89	18.23	1997/98	9.11
1989/90	18.50	1998/99	5.07
1990/91	16.30	199/2000	5.15
Average	13.92	Average	13.06

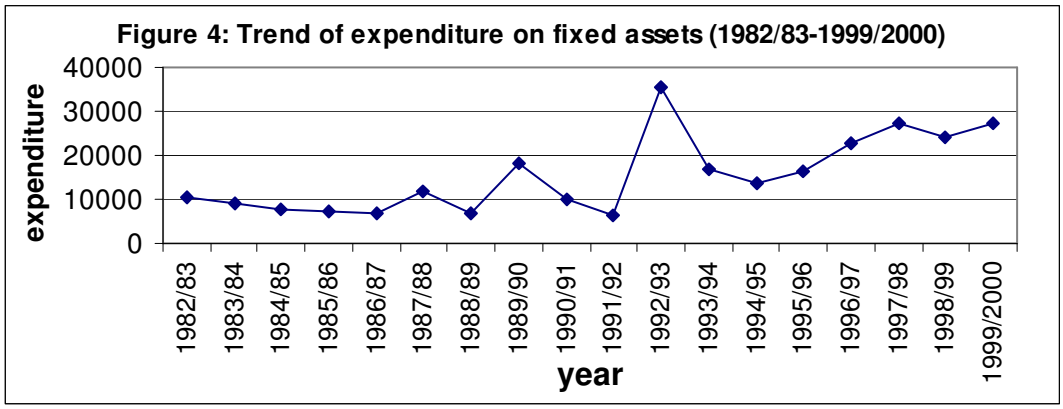
Source: own computation

5.3 EXPENDITURE ON FIXED ASSETS

The other factor worth mentioning in analyzing the performance of the manufacturing industry is the capital expenditure made within the sector. This variable can be considered as a proxy for investment made in the manufacturing industry to expand the existing capacity. The average real capital expenditure of the industrial sector amounted Birr 15,489 thousand over the whole period, and Birr 9,796 and Birr 21,182 before and after the reform periods, respectively. It grew on average by 113% for the whole period and by 102%and 126%before and after the reform periods, respectively (Table A6).

The data further exhibits that the largest expenditure on fixed assets was made in1992/93 and the growth rate for this year, taking 1991/92, as the base year was about 755%. Investment on

fixed assets was also large during 1993/94, with the growth during this period amounting about 159%. Following 1993/94, however, there appears a fluctuation, rising in some years and falling in others. Considering the pre-reform period alone, growth of expenditure on fixed assets was high in 1989/90 and 1990/91, showing, possibly, the response of the sector to the then declared mixed economic policy. However, the trend was immediately reversed and investment expenditure declined by about 19% in 1991/92.



Comparing each sector in terms of investment expenditure shows that food and beverages sector exceeds the others by far. It accounts for 36%, 40% and 35%, respectively, during the whole period, in the pre and post reform periods, of the total capital expenditure in the manufacturing sector. The next dominant sector in terms of investment share is the textile sector.

Table 8 shows that the share of investment expenditure of non-metal and plastic and rubber sectors has substantially increased, raising the sectors' position to the second and the third places in the manufacturing sector in the post reform period. In the contrary, the share of the textile sector has substantially declined, moving its position down.

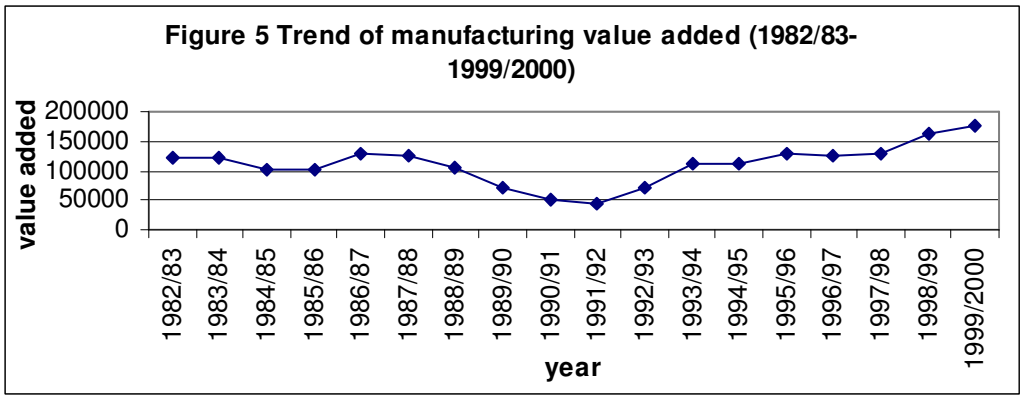
Table 8: Share of each sector in total expenditure

Sector	1982/83-1999/2000	1982/83-1990/91	1991/92-1999/2000
Food &beverage	36.18	39.67	34.57
Tobacco	1.07	2.75	0.30
Textile	14.46	22.18	10.89
Wearing app	1.18	1.08	1.22
Leather	7.96	7.42	8.22
Wood	0.54	1.28	0.20
Paper	4.44	4.67	4.33
Chemicals	5.70	4.73	6.14
Rubber & plastic	10.39	4.37	13.18
Non metal	11.47	4.22	14.82
Iron & steel	2.01	2.25	1.90
Metal	3.04	4.78	2.24
Machinery	0.14	0.20	0.11
Furniture	1.41	0.41	1.88
Total	100.00	100.00	100.00

Source: own computation

5.4 VALUE ADDED

Considering the period 1982/83 to 1999/2000, manufacturing value added grew on average by about 9.2%. The average growth rate, however, differ between the pre and post reform periods. In the pre reform period manufacturing value added declined by 3.6%, while it increased by 20.6% in the post reform (Table A7).



Often the difference in the ratio of value added to gross output across industries exhibit the extent of linkage they have with the other sectors. Higher linkage implies higher specialization and intermediate input use and less value added (Berhanu and Befekadu, 1999/2000). Considering the whole period shows that the highest ratio of value added to gross output is registered in the wood sector, followed by paper and printing and machinery and equipment sectors. In the wood sector the ratio amounted 53%, while it is 42.5% and 40% in the paper and printing and machinery and equipment sectors. Comparing the pre and post reform periods on the basis of this ratio in general depicts that almost no change has taken place in terms of linkage across the different manufacturing sectors (Table A8).

The ratio of value added of each sector to the total value added might depict the structural change that occurred in each sector. As indicated in table 9, a measure of this ratio indicates that the largest share is accounted by food and beverages sector followed by textile and leather sectors. A further look at the pre and post reform periods indicate that the share of textile sector has substantially declined after the reform period, while in the non-metal sector the share has increased substantially. However, except in these few cases the ratio has almost

remained the same for the other sectors, with the implication that the manufacturing sector has not shown structural change over time

Table 9: percentage share of each sector in total value added

Sector	1982/83-1999/200	1982/83-1990/91	1991/92-1999/2000
Food beverage	40.40	39.98	40.77
Tobacco	5.29	4.91	5.62
Textile	13.99	18.63	9.95
Wearing apparels	1.73	2.37	1.17
Leather	7.97	6.98	8.83
Wood	1.63	1.77	1.52
Paper	6.26	6.15	6.35
Chemicals	5.16	4.87	5.42
Rubber and plastic	4.73	4.98	4.51
Non metal	6.79	4.06	9.17
Iron and steel	2.16	1.43	2.80
Metal product	2.21	2.66	1.81
Machinery and equip	0.16	0.15	0.18
Furniture	1.52	1.06	1.92

Source: own computation

5.6 NUMBER OF FIRMS AND EMPLOYMENT

A look at the number of firms in each sector exhibits that it has been fluctuating over time. This up and down shows the prevalence of closing of business or the reduction of employment within firms on one hand and an entry condition on the other. The number of firms in the medium and large-scale manufacturing industries declined significantly in year 1989/90-1992/93 as compared to the preceding years. However, it started to increase after 1993/94, implying the increase in competition in the manufacturing sector.

The dominant sector in the overall industry in terms of number of firms is food and beverages sector. Considering the whole period, on average the number of firms in food and beverage sector account for about 36% of the total firms in the industry, and this is followed by the non-metal and textile sectors, which account for 8.8% and 8.5% respectively. Furniture, leather and the paper sectors also have a relatively higher share. Comparing the periods after and before the reform, it is observed that the share of food and textile sectors has shown a slight decline; while sectors like leather, non-metal and furniture have shown an increase.

Table 10: Number of firms in each sector as Percentage of the total

Sector	1982/83-1990/91	1991/92-1999/200
Food & beverage	39.80	32.46
Tobacco	0.45	0.20
Textile	11.45	5.64
Wearing apparels	2.76	3.21
Leather	6.17	8.18
Wood	5.67	3.28
Paper	6.69	7.05
Chemicals	3.94	5.00
Rubber and plastic	3.13	3.19
Non metal	7.57	10.11
Iron and steel	0.83	0.78
Metal product	5.70	5.94
Machinery and equip	0.69	1.58
Furniture	4.63	12.19

Source: own computation

Time series of the manufacturing employment depicts that it has not undergone any substantial change over the period 1982/83-1999/2000.Manufacturing employment has almost remained the same during the pre and post reform periods, except the decline observed during 1990/91 and 1991/92. This is mainly due to the decrease in employment observed in tobacco, textile, wood and rubber and plastic sectors possibly due to the retrenchment program in some public owned firms. Employment share of textile, food and beverages sectors is high compared to the share of the other sectors both during the pre and post reform periods (Table A9)

Table 11 Average employments of each sector

Sector	1982/83-1990/91	1991/92-1999/2000
Food beverage	22324	24475
Tobacco	1069	939
Textile	31470	27919
Wearing apparels	3590	4017
Leather	5332	7158
Wood	7109	2147
Paper	4184	5113
Chemicals	2144	3023
Rubber and plastic	2889	2383
Non metal	3278	5594
Iron and steel	908	1137
Metal product	1675	1909
Machinery and equip	281	348
Furniture	1057	2800
Average	6237	6354

Source: Own computation

In general, review of the manufacturing sector depicts that output, sales, value added, number of firms and expenditure on fixed assets have increased in the post reform periods.

Employment depicted an increasing trend in some sectors, and decreased in others. Measured by all indicators, the manufacturing sector is dominated by few sectors and such a situations has almost remained the same for the pre and post reform periods, with the implication that the sector has not under gone a major structural change over a period of time.

CHAPTER SIX

PRODUCTIVITY ANALYSES

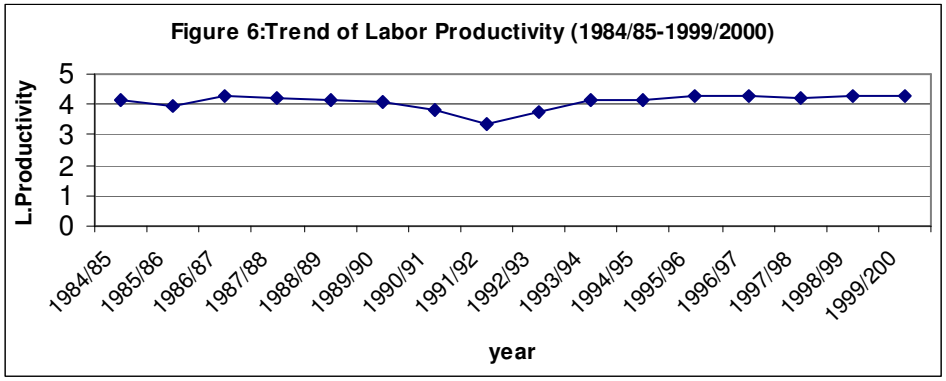
Trade liberalization is expected to increase real output of the manufacturing sector, which, in turn, leads to an increase in productivity by reducing idle capacity and making a better use of economies of scale (Gauthier, 2001). Furthermore, competition faced by domestic firms from both international markets (imports) and local market (domestic firms) is expected to force them to improve productivity in order to exist within the competitive environment.

Analysis of different productivity measures (labor productivity, total factor productivity, unit cost of production and technical efficiency) of the manufacturing sector in Ethiopia is made in this section. The analysis includes, estimation of different productivity equations indicated in chapter three and descriptive investigations of trend, structure, and inter industry variation or similarity of the different productivity measures.

6.1 LABOR PRODUCTIVITY

Labor productivity used for the purpose of this study is measured by the logarithm of real output per employee. Such measurement is made for each sector in the manufacturing industry, over the period 1984/85-1999/2000.

Trend of the average labor productivity in the manufacturing industry depicts that no major change has taken place over the stated period. Just like the case of real output labor productivity also declined around 1990/91 and depicted an increasing trend then after. However, the increase is not continuous (figure 6). Generally, labor productivity grew on average by about 1.2% during 1984/85 to 1999/2000 and by 1.7% after the reform period (Table A11).



Comparing the different sectors in the manufacturing industry, however, shows that both the average and growth of labor productivity vary across sectors. Tobacco, motor vehicles and iron & steel sectors have higher average labor productivity than the other sectors. This is also true when we take and compare the average for the period after the reform with the whole period average.

In terms of growth, tobacco, wearing apparels and the metal sectors have shown a negative growth over the whole period, while productivity growth for motor vehicle, iron and steel, textile and the rubber sectors is higher than the remaining sectors in the after reform period.

Estimation of equation 3.6 is made using the random effects GLS regression and the result is given in table 12.

Table 12: Econometric estimation of the relation between labor productivity and indicators of liberalization

Random-effects GLS regression — Number of obs = 240

Group variable (i): id — Number of groups = 15

Wald chi2 (7) = 91.20

R-sq: within = 0.2918 — Prob > chi2 = 0.0000

Between = 0.1384

Overall = 0.1612

Random effects u_i ~ Gaussian

Variables	Coefficient.	Standard error	Z	P>|z|
Bias	0.134	0.087	1.542	0.123
Intensity	0.133	0.311	0.427	0.670
HHI*	-10.033	2.344	-4.281	0.000
Parallel premium	-0.061	0.038	-1.591	0.112
Employment	-0.353	0.074	-4.763	0.000
Export dummy	-0.177	0.503	-0.352	0.725
Regime dummy	-0.230	0.073	-3.139	0.002
Constant	9.068	0.899	10.087	0.000

HHI is the Herfindhal- Hirschman index*

Estimation results show that HHI, logarithm of employment and regime dummy are significant at1%. Though unconventional, parallel market premium and bias in trade regime are also significant at 12% and 13% level of significance. Considering the sign, except for the bias in the trade regime and import intensity all the variables have negative signs.

As explained in the previous section, HHI decreases as competition in the given market increases. This means that it is negatively related to the dependent variable (labor productivity in this case), in a situation where the latter is increasing. The negative sign of the HHI, therefore, shows that the

increase in competition among domestic firms (due to increase in the number of firms) leads to an increase in the productivity of labor in the manufacturing industry.

The sign of logarithm of employment is found to be negative. This implies that labor productivity declines as firms increase employment more than a desired level. In this particular study it may also show that labor productivity is lower for sectors characterized by high employment.

The fact that the sign of the parallel market premium is negative in the above result implies that liberalizing the foreign exchange market and reducing the tariff rates have a positive impact on the productivity of the manufacturing industry. This is because the availability of foreign exchange in the official market and reduction of tariff (which lead to fall in the parallel premium) allow manufacturing firms to import raw materials, spare parts and machinery to the required extent. When foreign exchange is easily available in the official market firms can also employ technical experts when need arises, and this has also an implication on the productivity of labor

Bias in the trade regime has a positive sign being in line with the initial expectation. However, the fact that this variable is not significant at the conventional level may show that changing price incentives (by improving effective exchange rate of exports as compared to the effective exchange rate of import) alone has no significant implication on labor productivity of the manufacturing industry as the sector is characterized by some structural problems.

Export dummy is insignificant in the above equation, implying that labor productivity does not substantially change in those sectors which initially engaged in export. This situation is also observed during the descriptive analysis, which showed that labor productivity changes are mainly registered in the sectors which were not initially engaged in exporting. However, this explanation should be taken with caution, as the data used in the analysis is a highly aggregated one (the industry concerned

consists of both exporting and non-exporting firms and, hence, it is impossible to know for which group labor productivity has fallen), i.e. a different result could be obtained if a firm level data is used in the analysis