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EFFICIENCY OF ETHIOPIAN PUBLIC MANUFACTURING ENTERPRISES AND THE POLICY ENVIRONMENT

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ABSTRACT: *The paper tries to look into the relationship between efficiency of Ethiopian public manufacturing enterprises and the policy environment to which they have been subjected. Financial performance, allocative efficiency and technical (X-) efficiency are used in the measurement of performance.*

1. INTRODUCTION

The contribution of manufacturing industry to GDP in Ethiopia has been low compared with many sub-Saharan African countries and it has not changed much over the past two decades. For example, the share of manufacturing value added in GDP was about 10 percent in 1970/71; the corresponding figure in 1986/87 was about 12 percent [8].[1]

An important change that has been observed in the Ethiopian manufacturing sector concerns the structure of ownership and the policy environment under which enterprises operated. In 1971/72, for example, the government's share in total paid-up capital in manufacturing industries was 35 percent [6]. This share increased significantly mainly because of the nationalization in 1975 but also due to government policy since then which discouraged private sector involvement in manufacturing activities. Recent data indicate that the public sector is predominant in manufacturing by almost all measures. In 1986/87, the year for which the latest comparable figures are available, 97 percent of the gross value of production and 98 percent of value added in manufacturing originated in the public sector. In the same year about 95 percent of permanent employees and about 52 percent of manufacturing establishments were in the public sector. Virtually all manufacturing export earnings (99.4 percent in 1986/87) have been obtained from this sector [7]. Public manufacturing industries have therefore an important place in Ethiopia's industrialization process.

The industrial sector in general and public manufacturing industries in particular have been faced with a number of problems including shortage of imported and

domestically produced inputs, low level of investment and inefficiency in production. This paper tries to look into the relationship between efficiency of Ethiopian public manufacturing enterprises and the policy environment to which they have been subjected. Accordingly in the remaining part of the paper financial performance, allocative efficiency and technical (X-) efficiency are discussed in that order.

2. FINANCIAL PERFORMANCE

The financial results of public industrial enterprises could influence, among other things, the level and composition of government expenditure, external debt and domestic credit. Depending on the financial policy under which public enterprises operate, a financially profitable public enterprise can make use of the surplus, among other things, to increase its working capital, finance expenditure on expansion projects or cover losses. On the other hand, a public enterprise that incurs large and persistent losses would be a burden to the government.

A look into the financial results of Ethiopia's puolic manufacturing enterprises (the majority of which are administered by the Ministry of Industry (MOI)) reveals that they were generally profitable. For example, the total financial profit of public industrial enterprises administered by MOI measured in millions of Birr was 200.3, 140.5 and 161.5 in 1979/80, 1984/85 and 1987/88 respectively [10]. But there were numerous discrepancies even among corporations. The following table confirms this statement. To make the figures comparable the financial rate of return (FRR), defined as the ratio of operating surplus to book value of fixed assets, is taken as a measure of financial profitability, where operating surplus is defined as value added at factor cost less wages and salaries, employees' benefit and depreciation.[2]

As can be seen from Table 1 above the average FRR for the public manufacturing industries was 20 percent in 1984/85 and 26 percent in 1987/88 but never dropped below 20 percent in the 1980s. The dispersion was, however, large, the range being the difference between 254 percent for printing and -3 percent for cement both in

Table 1. Financial Rate of Return (FRR) of Public Manufacturing Enterprises by Corporation (%)*

Corporation	1984/85	1987/88
Ethiopian Food	33	12
Ethiopian Sugar	19	26
Ethiopian Beverages	31	23
National Tobacco and Matches	108	243
National Textiles	4	4
National Leather and Shoe	30	137
Ethiopian Printing	254	172
National Chemical	139	117
Ethiopian Cement	- 3	2
National Metal Works	51	31
Share Companies	92	49
Average	20	26

*Only those enterprises administered by MOI are included. These enterprises accounted for about 89 percent of employment, 77 percent of value added and 78 percent of the total number of establishments in the public manufacturing sector in 1986/87.

SOURCE: MOI, *Statistical Bulletin VII*, June, Addis Ababa, 1990, pp. 94-99.

1984/85. It was only textiles and cement that recorded an FRR much less than the average, the latter with negative values for most of the 1980s [7].

In spite of the relatively high FRR in the sector, most of the enterprises have been faced with shortage of financial resources which made them increasingly dependent on short-term and long-term loans from the banking system. For example, the financial structure of the enterprises nationalized in 1975 is said to have been weak but then it grew weaker over time. The debt-equity ratio for the sector has been increasing steadily since 1978 growing from 16 in 1978 to 50 in 1988 with the exception of 1984 when there was a decline.[3] This is partly due to the government's financial policy which left enterprises with a small sum of money at their disposal. In particular, in addition to the payment of a 50 percent profit tax, public industrial enterprises have been required by

proclamation No. 163 of 1979 to transfer money to the Treasury in two forms. These are: (1) capital charges the amount of which is 5 percent of the state capital plus the general reserve fund and (2) residual surplus which is about 90 percent of the after-tax profit. Thus enterprises retained only 10 percent of the after-tax profit and this has been put into their general reserve funds until such reserve fund equals 30 percent of the state capital [8].[4] The result is that while profit making enterprises retain a very small proportion of their profit, the losing ones would simply face the problems of shortage of working capital and decline in their equity.

3. EFFICIENCY IN RESOURCE ALLOCATION

In this section we are concerned with economic profitability of the enterprises. An enterprise is said to be economically profitable if the economic value of its output is greater than the opportunity costs of commodities and factors of production utilized in production. Since inter-industry and inter-enterprise comparison of economic profit is not precise, if not meaningless, there is a need for some measures which help standardize the comparisons. The measure that we use here is the domestic resource cost (DRC) coefficient - a ratio which is used as a measure of allocative efficiency. DRC coefficient is the ratio of domestic factor costs to domestic value added (revenue minus the value of tradeable inputs), all measured in economic prices. It can be shown that the DRC coefficient and the NPV formulas are alternative statements of the same benefit-cost rule [1]. The problem, however, is that what is utilized in this paper is a single period efficiency measure which is based on the annual profitability of an enterprise. Thus the relative rankings of enterprises on the basis of allocative efficiency could change over time if there are changes in input-output coefficients and/or economic prices of inputs and outputs. With this caveat in mind, we can discuss allocative efficiency in industrial public enterprises.

The analysis of allocative efficiency is based on World Bank Industrial Survey Mission estimates in 1983 and 1988.[5] The following table shows average DRC measures by corporation for a sample of 35 industrial public enterprises in 1988 (for details and 1983 estimates see Annexes 1 and 2).

In the calculation of the DRC coefficients reported in Table 2 domestic value added (DVA) is measured in domestic currency (the Birr). Thus we say that an enterprise is allocatively efficient if the DRC coefficient takes on a value less than or equal to one but greater than zero.

At least four major conclusions emerge from the DRC coefficients shown in Table 2 and the Annexes. The first is that more than half of the sampled enterprises were allocatively efficient and therefore for this group resources were properly allocated to economically profitable enterprises. But there were also enterprises which were highly inefficient, some with high positive DRC coefficients (e.g., Addis Garment and Ethiopian Rubber and Canvas Shoe with actual long-run DRCs of 14.73 and 14.03 respectively) and some others with negative domestic value added (NVA). The latter case is more serious for it means that the value of the commodity produced is even less than the value of tradeable inputs utilized when economic prices are used in the measurement.

Secondly, some inefficient firms become efficient when short-run DRC coefficients are considered, i.e., when capital is assumed to be sunk cost. This is the case for the Ethiopian Beverages Corporation as can be seen from Table 2. Specific examples in this category include the Ethiopian Tannery and Ambo Mineral Water.

Thirdly, DRC coefficients improve when border prices are converted into domestic currency using a shadow exchange rate, which assumes overvaluation of the domestic currency, in the computation of the coefficients. Some inefficient firms become efficient when this is done, as can be seen from the Annex, suggesting that *ceteris paribus* these firms would be economically profitable after devaluation. But the macroeconomic implications of this should be studied since the multiplier effects could lead to results worse than the situation before devaluation.

Fourthly, the coefficients reported in Table 2 and the Annex are based on actual capacity utilization. Thus an increase in the rate of capacity utilization would lead to an improvement in DRC coefficients. The improvements would be significant for those enterprises with very low rates of capacity utilization such as the Nazareth Tractor Assembly with a rate of 10 percent in 1988.

Table 2
Domestic Resource Cost (DRC) Coefficients for Public Manufacturing Enterprises by Corporation in 1988.

Corporation	No. of Enterprises included in the sample	Official Exchange Rate		Shadow Exchange Rate	
		Long-run DRC	Short-run DRC	Long-run DRC	Short-run DRC
Ethiopian Food	1	0.73	0.29	0.53	0.17
Ethiopian Beverages	5	1.72	0.74	1.23	0.44
National Textile	7	0.91	0.50	0.63	0.30
National Leather and Shoe	11	0.83	0.53	0.55	0.32
National Chemical	5	0.36	0.21	0.25	0.13
Ethiopian Metal Works	6	0.48	0.26	0.34	0.15
Average(Total)	35	0.82	0.45	0.57	0.27

SOURCE: World Bank, *Ethiopia: Industrial Sector Review*, Report No. 7831 -ET, July, 1989, Annex.

A comparison of financial and economic profitability reveals different combinations including firms that are financially profitable but allocatively inefficient and vice-versa. The reason for the divergence is the difference between market prices (on the basis of which financial profits are determined) and economic prices (which represent opportunity costs) of inputs and outputs. The government's pricing and trade policies are the main factors that cause the difference.

The prices of most of the goods manufactured by Ethiopian public enterprises have been controlled and the pricing rule has been cost-plus pricing which does not consider border prices and is based on actual costs which may reflect inefficiency. A look at the nominal protection coefficient (NPC) - which is the ratio of market prices to economic (border) prices - indicates the divergence of market prices from economic

prices and the non-uniformity of the divergence among enterprises. There are enterprises with NPC as high as 2.20 (Ethiopia Fibre Factory) and as low as 0.47 (Addis Ababa Cement). Another point to note is that in spite of price controls, the NPCs are greater than one for most of the sampled enterprises. In this connection we may also note that the average NPC for the sample of enterprises in 1983 and 1988 was generally low (1.11 and 1.23 respectively) which is mainly because of import controls which were more important than import duties and other indirect taxes.

The effect of the government's trade policy on an enterprise is seen from its impact on input and output prices through taxes and subsidies. Thus the structure of protection and domestic trade policies may or may not be in favour of an enterprise depending on their net effect on input and output prices. This can be measured by the effective protection coefficient (EPC) defined as the ratio of domestic value added at market prices to domestic value added at economic (border) prices both measured in the domestic currency.

EPCs calculated for a sample of public industrial enterprises in 1983 and 1988 indicate that while the average EPC was generally low (1.36 in 1983 and 1.26 in 1988), there was a large dispersion. There are enterprises with an EPC as low as 0.03 which is equivalent to -97 percent effective rate of protection (for Addis Ababa Cement in 1983) and as high as 29.05 (for Ethiopian Rubber and Canvas Shoe in 1988). This is excluding enterprises with negative domestic value added whose EPC can be considered as infinity (higher than a high positive EPC). The implication for those enterprises with EPCs greater than one is that the trade policy is in their favour while it acts as a disincentive to those with EPCs less than one. Thus, at least partly due to the high degree of effective protection, enterprises such as the Ethiopian Rubber and Canvas Shoe and Anbessa Shoe are making positive financial profits in spite of their negative economic profits. On the other hand, enterprises such as the Addis Ababa Cement incur financial losses in spite of the positive economic profit the firm makes. Thus we can conclude that under the existing policy environment financial profitability is a misleading indicator of an enterprise's performance.

4. TECHNICAL (X-) EFFICIENCY

Over four decades have passed since the possibility of the existence of technical inefficiency has been noted and attempts made to define and measure it. It seems, however, that the concept has received greater attention since the publication of Leibenstein's article entitled "Allocative efficiency vs. X- efficiency" in 1966.[6] The following is a general definition which Leibenstein gives for X-inefficiency.

> Inputs or factors of production may be allocated to the right units for use. However, there is no need to presume that the decision and performance units involved must use inputs as effectively as possible. We refer to the difference between maximum effectiveness of the utilization of inputs and the actual effectiveness as the degree of X-inefficiency. Quoted in [2, p.4]

Four reasons are suggested by Leibenstein for X-inefficiency connected with the basic notion of variable performance for given units of inputs. These are : contracts for labour are incomplete; the production function is not completely specified or known; not all inputs are marketed or, if marketed, are not available on equal terms to all buyers; and the effective utilization of an input depends on the degree of motivational pressure, as well as other motivational factors [4]. Leibenstein extended his argument to the extent of attacking conventional micro theory and has developed what he calls micro-micro theory as a new foundation for microeconomics.

Two general sources of technical (X-) inefficiency could be identified in the case of public industrial enterprises in Ethiopia: one is inefficiency due to the existing system which applies to all enterprises; the other is inter-enterprise differences in technical (X-) efficiency given the existing system. Analysis of technical inefficiency of the latter type requires estimation of such measures as total factor productivity (TFP) growth and production frontiers using detailed enterprise level data which is beyond the scope of this paper. With respect to the first source - system inefficiencies - there are two areas which seem to have encouraged technical (X-) inefficiency in Ethiopia: the organizational structure and the incentive system.

The problem with the organizational structure is that the decision making system has been highly centralized. In addition to being lengthy, the system left enterprise managers with very limited power since major decisions have been made at the top.

Logically enough, under this system, enterprise managers were not held accountable for the outcomes of those decisions. Nor was there any clearly specified incentive to the managers which motivates them to improve efficiency in resource use.

As regards the incentive system, with the objective of linking incentives to firms' performance, the government introduced some wage policy reforms in 1979/80. There are three elements in the incentive system of these reforms; an increase in the total wage bill for enterprises by: (1) 5 percent if physical output increases; (2) 1 percent if productivity per worker increases; and (3) 1 percent if profit increases over the previous year [9].

Four major problems could be mentioned in relation to the incentive system. First, the most important measure of performance used, i.e., increase in physical output, does not pay attention to quality and more importantly is not necessarily related to an improvement in technical efficiency. An increase in physical output and misutilization of resources may go together. Second, our analysis of financial performance and allocative efficiency has shown that an increase in financial profit does not necessarily mean that the firm is more efficient. On the other hand an enterprise that incurs losses may not necessarily mean it is inefficient in the utilization of resources and therefore does not have to be penalized. Thus, unless the reasons for the increase in profit are specified, workers of an enterprise may be rewarded for an improvement in financial profit caused by factors not related to their performance.

Third, what is considered in the incentive system is an increase in the three variables without paying attention to the rate of increase, which is also important. Fourth, the incentive system applied to those whose monthly income is less than Birr 600 and proportionately more of the benefit went to those in the low income bracket. While this is attractive from the point of view of income distribution the exclusion of those employees with monthly income greater than or equal to Birr 600 would have a negative impact on technical efficiency.

5. CONCLUSION

It should be noted that while arguments in favour of allocative efficiency may be objected to on the ground that there are objectives other than maximization of economic profit such as income distribution, there seems to be no acceptable justification for technical (X-) inefficiency. Moreover, since an improvement in technical (X-) efficiency means that a given level of output can be produced with less of the inputs or more can be produced with given inputs, this will also lead to an improvement in actual efficiency in resource allocation and financial performance because of a decrease in unit costs (both financial and economic). Therefore, irrespective of the acceptability of resource allocation decisions, once they are allocated to specific uses, resources have to be utilized as efficiently as possible and the government should make attempts to make enterprises technically (X-) efficient as much as possible. Thus, it is suggested that the incentive system be linked with real measures of performance such as productivity as opposed to physical output. Moreover, given that management has an important role to play in influencing a firm's performance, enterprise managers should be given more autonomy and at the same time be held accountable for the outcomes of their decisions - i.e., they should be penalized or rewarded as the case may be.

But it is also important to see the other dimension of the real contribution of enterprises to the economy. This point is more important in the case of enterprises with negative domestic value added, for this cannot even be justified by sensible non-efficiency objectives such as income distribution and employment. On the other hand, rehabilitation and restructuring of the marginally inefficient enterprises could make them efficient. In this connection it is suggested that, mainly in the establishment of factories, non-efficiency objectives and externalities be taken into account with dynamic allocative efficiency considerations in mind.

The discussion on pricing and trade policies indicated that financial profitability is not a good indicator of performance. Yet good financial performance is important, for industrial public enterprises could otherwise be a burden to the government. In this respect, it is suggested that attempts be made to avoid discrimination among public enterprises in terms of policy even under conditions where firms are protected from

foreign competition. Two major exceptions that should be considered here are: the really infant industries and those to which non-efficiency objectives apply. But even here the additional costs should be identified so that the government could act accordingly. And under all these constraints attempts should be made to improve efficiency and make firms operate as commercial enterprises. One suggestion in this respect is avoiding special treatment to industrial public enterprises (e.g., subsidized interest rates) which do not apply to similar enterprises in the private sector. Finally, given the limited coverage of this paper and some of the restrictive assumptions used which can be relaxed, a detailed study is required.

NOTES

1 The definition of manufacturing industry used in this paragraph includes small-, medium- and large-scale industries.

2 The FRR figures may be overstated since no adjustment is made for changes in market prices in the measurement of fixed assets due to lack of the relevant information. This may be one of the main reasons for the large values of FRR reported in Table 1 for some of the corporations. Under such conditions comparisons of financial and economic rates of return (ERR) may be unrealistic. But differences in the signs of FRR and ERR figures, as is the case for some of the enterprises considered in this paper, are clear indicators of divergences between these two values, irrespective of the method of measurement of capital employed. Note also that the comparison made in section 3 of this paper refers to absolute measures of economic and financial profitability without division by capital employed.

3 Obtained from unpublished documents of MOI.

4 Some special provisions are given in the proclamation.

5 In the computation border prices are taken as measures of economic prices of tradeables noting that these are the opportunity costs (of exportables or importables as the case may be) and Ethiopia is a price -taker. See [9, 10].

6 Technical and X-efficiency are used interchangeably in this paper although Leibenstein makes a distinction between the two. For details, see [5].

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ANNEX 1. Structure of Protection and Efficiency of Industrial Public Enterprises,1983.

CORP/ENTERPISE	NPC	EPC	Long-run DRC	S.E.R. L.R.DRC	Short-run DRC
I. ETHIOPIAN FOOD					
Dire Dawa Flour Mill	.89	.29	1.02	.79	.83
II. Ethiopian Sugar					
Wonji Sugar Factory	.84	.69	.74	.57	.60
III. Ethiopian Meat					
Dire Dawa Meat	1.11	2.05	1.52	1.17	1.36
IV. Ethiopian Beverage					
Babile Mineral	1.11	1.09	.89	.68	.61
Melotti Brewery	1.49	2.24	1.93	1.49	1.31
Awash Winery	1.88	3.11	1.20	.92	.99
Addis Ababa Glass Works	1.50	5.64	4.37	3.36	1.83
Sub-total	1.55	2.52	1.70	1.31	1.06
V. NATIONAL TEXTILES					
Dire Dawa Textiles	1.14	1.84	1.37	1.05	.84
Asmara Textiles	1.19	8.63	3.45	2.65	2.71
Ethiopia Fibre Factory	2.20	-6.61	-2.94	-2.26	-2.44
Sub-total	1.22	2.64	1.70	1.31	1.11
VI. National Leather & Shoe					
Ethiopian Footwear	1.47	1.77	.84	.65	.42
Awash Tannery	1.00	1.16	.36	.28	.31
Sub-total	1.06	1.27	.45	.35	.33
VII.Ethiopian Woodworks					
Warka Woodworks	.11	.64	2.07	1.59	1.97
VIII.ETHIOPIAN PRINTING					
Ethiopian Pulp & Paper	1.49	-6.10	-4.34	-3.34	-2.06
IX. NATIONAL CHEMICAL					
Addis Tyre	1.16	1.25	1.16	.89	.82
Ethio Plastic	1.14	.97	.83	.64	.43
Sub-total	1.16	1.19	1.02	.83	.73
X. ETHIOPIAN BUILDING MATERIALS					
Addis Ababa Cement	.47	.03	.41	.31	.23
XI. NATIONAL METALWORKS					
Ethiopian Iron & Steel	1.11	.63	2.87	2.21	2.32
Kalite Steel	2.00	-9.89	-2.68	-.21	-.3
Sub-total	1.41	9.45	7.53	5.79	.86
TOTAL MANUFACTURING	1.11	1.36	1.09	.84	.74

SOURCE: World Bank, Ethiopia: Industrial Sector Review, Report No. 5301-ET, Washington, D.C., 1985.

ANNEX 2. Structure of Protection and Efficiency of Industrial Public Enterprises, 1988.

Corporation/Enterprise	NPC	EPC	Actual S.R.D.R.C.	Actual L.R. D.R.C	Actual Capacity Utilization	Financial Profitability	Shadow Exchange Rate S.R. D.R.C.	Shadow Exchange Rate L.R. D.R.C.
Ethiopian Food Corporation								
1. Ethiopian Spice Extraction	1.04	1.02	-.20	.79	82	500	.53	.17
National Meat Corporation								
2. Dire Dawa Meat Canning					25			
Ethiopian Beverages Corporation								
3. Ambo Mineral Water	1.29	1.39	.79	1.45	74	185	1.00	.47
4. Babile Mineral Water	1.54	.40	nva	nva	99	-986	nva	nva
5. Addis Glass & Bottle	2.01	-.38	nva	nva	68	-2346	nva	nva
6. Harar Brewery	1.92	5.39	1.00	4.12	64	2168	3.09	.60
7. Awash Winery	1.14	1.05	.27	.42	33	3371	.28	.16
Sub-total	1.51	2.23	.74	1.72	–	2392	1.23	.44
National Textiles Corporation								
8. Addis Garment	1.16	3.42	10.34	14.73	26	-940	9.75	6.21
9. Adey Abeba Yarn	1.12	.78	.36	.67	92	944	.46	.22
10. Akaki Textiles	1.18	1.00	.49	.61	94	8825	.30	.29
11. Combolcha Textile	2.17	-4.04	nva	nva	24	-21.89	nva	nva
12. Dire Dawa Textile	1.15	.97	.4	.63	96	13141	.42	.24
13. Ethiopian Fibre Products	1.40	2.14	.81	1.16	76	3234	.77	.49
14. Gulele Garment	1.59	-2.02	nva	nva	30	315	nva	nva
Sub-total	1.23	1.11	.50	.91	–	18330	.63	.30
National Leather & Shoe Corporation								
15. Addis Tannery	1.06	1.08	.29	.38	n.a.	1520	.24	.17
16. Awash Tannery	1.01	1.07	.34	.33	88	5229	.22	.14
17. Combolcha Tannery	.98	.98	.15	.22	n.a.	881	.15	.09
18. Ethiopia Fickling & Tanning	.98	1.01	.30	.29	n.a.	1926	.19	.12
19. Ethiopian Tannery	.99	.99	.37	1.12	n.a.	1736	.83	.22
20. Modjo Tannery	.98	.96	.22	.28	18	1905	.18	.13
21. Anbessa Shoe	1.69	8.95	3.86	4.80	51	1283	3.06	2.32
22. Ethiopian Footwear	1.46	2.25	1.03	1.39	n.a.	522	.91	.62
23. Ethiopian Rubber & Canvas Shoe	1.71	29.05	10.18	14.03	55	3017	9.19	6.11
24. Tikur Abey Shoe	1.62	4.40	1.67	1.94	59	3646	1.22	1.00
25. Universal Leather Articles	1.18	3.58	[illegible]	nva	30	-1225	nva	nva
Sub-total	1.17	1.63	.50	.81	–	18524	.55	.32

Corporation/Enterprise	NPC	EPC	Actual S.R.D.R.C.	Actual L.R. D.R.C	Actual Capacity Utilization	Financial Profitability	Shadow Exchange Rate S.R. D.R.C.	Shadow Exchange Rate L.R. D.R.C.
National Chemical Corporation								
26. Ethiopia Plastic	.88	.64	.13	.23	77	3768	.16	.08
27. Addis Foam & Thermoplastic	1.71	2.98	.45	.70	25	3454	.47	.27
28. Gulele Soap	1.85	6.16	.64	.81	93	3686	.52	.38
29. Massawa Salt	1.71	-.91	n/a	n/a	49	-578	n/a	n/a
30. Tesdey Paints	1.10	.78	.14	.16	40	2822	.10	.08
Sub-total	1.22	1.14	.21	.36	–	12152	.25	.13
Ethiopian Works Corporation								
31. Ethiopian Iron & Steel	1.28	1.46	.41	.75	60	3195	.52	.25
32. Kaliti Metal Works	.99	.61	.09	.17	n.a.	3513	.12	.05
33. Kolfe Household Utensils	1.12	1.14	.19	.26	40	1437	.17	.11
34. Kotebe Metal Tools	1.03	.91	.26	.46	75	277	.32	.16
35. Nazareth Tractor Assembly	2.00	12.84	1.17	4.57	10	2639	3.42	.70
36. Wurka Household & Office Furniture	1.54	1.66	.60	.73	96	1046	.47	.36
Sub-total	1.25	1.22	.26	.48	–	13107	.34	.15
Total	1.23	1.26	.45	.82	–	65205	.57	.27

Notes: NPC = Nominal Protection Coefficient
EPC = Effective Protection Coefficient
S.R.D.R.C. = Short-run Domestic Resource Cost
L.R.D.R.C. = Long-run Domestic Resource Cost Coefficient

SOURCE: World Bank, *Ethiopia: Industrial Sector Review*, Report No. 7831-ET, July, 1989, Annex.