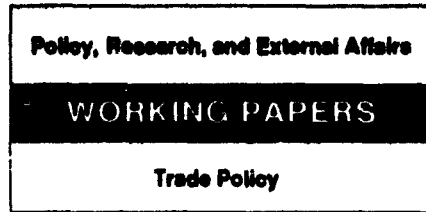


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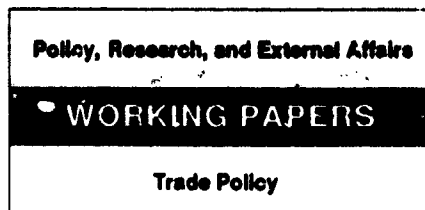


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# Foreign Trade and Its Relation to Competition and Productivity in Turkish Industry

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**Trade liberalization has improved productivity in the industrial private sector — especially tradables — but not in the public enterprises. Improved productivity of the latter has come from other sources.**



WPS 604

This paper — a product of the Trade Policy Division, Country Economics Department — is part of a larger effort in PRE to study the effect of trade liberalization on the performance and conduct of the industrial sector. Copies are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sheila Fallon, room N10-041, extension 37942 (58 pages).

Trade liberalization and more exposure to international competition generally benefited Turkish industry in the 1980s. But the effect of international competition appears to have been felt mainly in the private sector — especially in tradable industries.

In the first half of the 1980s, international competition decreased the price-cost margin and increased the growth rate of productivity in the

private sector. In the public sector, deeper trade penetration seems to have lowered the price-cost margin in the public enterprises that were above-average in capital intensity, but had no impact on productivity.

Improved productivity in the public enterprises appears to be more related to changes in other areas — probably the reform of management.

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## TABLE OF CONTENTS

	<u>Page No.</u>
I. Introduction	1
II. Background on Turkey	4
a. Import Liberalization	5
b. Export promotion	8
III. Industry-Level Analysis	10
a. Data Preparation	10
b. Analysis of price-cost margins	15
c. Analysis of Productivity	23
d. Comparison With Earlier Findings	33
e. Conclusions	36
Tables (1-28)	37
Bibliography	57

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## I. INTRODUCTION

This paper, which is part of a larger research project<sup>1</sup> examines how, if at all, the reform of the trade regime in Turkey during the 1980s has affected the performance and competitiveness of the Turkish industrial sector. Of course, reform of the foreign trade regime has coincided with reforms in other areas of the economy, namely the tax system, the state economic enterprises, and the financial markets. Therefore, it is possible that some of the results one attributes to changes in the foreign trade regime of Turkey are indeed a fruit of trade reform as well as reforms in these other areas of the economy. However, to the extent possible, an attempt shall be made here to isolate the effects of changes in the trade regime from other changes in the economy.

It is often argued that a more liberal trade regime is desirable because other than static gains deriving from allocative efficiency, a more liberal trade regime gives rise to gains stemming from price efficiency and/or productive efficiency.

Price efficiency is addressed in the literature on the relation between trade and market structure.<sup>2</sup> The essence of the argument is that

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1. See James Tybout, December 1987.

2. See for example Caves (1985), Krugman (1986) and Dixit and Norman (1980, chap. 9)

in domestic markets characterized by entry barriers, exposure to international competition reduces the market power of domestic producers. This affects both their production and pricing decisions leading to lower mark-ups and higher output levels. Trade reduces monopolistic distortions.

Productive efficiency can be thought of as arising from scale efficiency and technical efficiency.<sup>3</sup> There are several reasons why a less protectionist trade regime increases scale efficiency. First, because trade enlarges the domestic market which might be too small for the efficient production of goods that show increasing returns to scale. Second, because in domestic markets characterized by excess profits<sup>4</sup> due to protection and free entry, trade reduces excess profits and discourages entry by small inefficient firms.<sup>5</sup>

A more liberal trade regime is also thought to contribute to greater technical efficiency for a variety of reasons. First, greater competition from abroad forces domestic firms to adopt newer, more efficient technology that reduces x-inefficiency and waste. Second, in the case of developing countries, freer trade eases the constraint imposed by the availability of foreign exchange and hence enables a country to import foreign capital goods that embody a more advanced technology than domestic capital goods. Third, a more open economy

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3. Corbo et al. (1988).

4. Excess profits disappear of course once entry occurs.

5. Ibid, and the bibliography quoted there.

results in faster absorption of technological progress.<sup>6</sup> Despite the common sense appeal of these arguments, their theoretical basis is not very robust. Indeed under the right set of assumptions some of these results can be reversed.<sup>7</sup> It is therefore ultimately an empirical issue to establish whether trade liberalization leads to greater productive efficiency and lesser monopolistic distortions or not.<sup>8</sup>

The present study tests the empirical relevance of these arguments to Turkey's experience of trade liberalization of the 1980s. Starting in 1980-81, the Turkish government introduced a series of major foreign trade liberalization measures that significantly increased the share of import and export trade in Turkish industrial output and the degree of exposure of domestic firms to international competition.

The remainder of the paper is divided into two parts. Part II provides a brief background on trade and other economic reforms in Turkey in the 1980s. Part III provides an analysis of industry-level relationships between trade liberalization, firms' competitive behavior as measured by changes in price-cost margins, and efficiency gains as

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6. See Nishimizu and Robinson (1984), Nishimizu and Page (1987), Romer (1989) and Edwards (1989).

7. See for example Rodrik (1988) and Bhagwati (1988).

8. For a recent survey of empirical literature linking the growth in total factor productivity to changes in the trade regime, see Havrylyshyn (1989). For a recent survey of empirical literature linking economic growth to trade policy see Edwards (1989).

measured by changes in total factor productivity. Due to the lack of appropriate data, the same analysis at plant level as well as the analysis of the patterns of entry and exit into and out of each industry is postponed until such data become available. However, unlike other countries which are part of this research project, Turkish data differentiate public from private enterprises. Public enterprises in Turkey account on average for a quarter of industrial output although their share varies greatly from one industry to another (see Tables 2-5). The availability of separate data for private and public sectors highlights important differences that have historically existed between public and private firms and permits a test of whether the reforms of the 1980s have narrowed these differences over time.

## II. BACKGROUND ON TURKEY<sup>9</sup>

Beginning in 1980, after two years of economic recession that followed the foreign debt crisis of 1977, Turkey adopted a stabilization program that represented a radical break with her traditional inward-looking development strategy. Liberalization of foreign trade and payments was a key feature of the stabilization program.

The trade liberalization measures introduced in the 1980s aimed at shifting the economy towards an export-led growth by dismantling the set of complex and highly restrictive rules and regulations that had in

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9. This part relies heavily on the following sources: Baysan and Blitzer (1985), Foroutan (1987), Milanovic (1986), and the World Bank Report No. 5365-TU (1984)

the past regulated Turkey's transactions with the outside world. These measures comprised four important steps:

- a gradual shift from non-tariff barriers towards tariffs or tariff type restrictions;

- a gradual reduction in the height and the variability of trade taxes, at least until 1985, when the surge in the so-called levies may have reversed the trend;

- deliberate promotion of exports; and

- devaluation of the real exchange rate.

#### II.a Import liberalization

The principal thrust of import liberalization was carried out in two separate steps, namely in 1981 and December 1983-January 1984.

The main aspects of import liberalization in 1981 were the abolition of quotas and the increase in the number of goods which could be legally imported. In order to appreciate fully the range of reforms introduced in the 1981 import regime, it is necessary to recall that imports were classified according to three lists:

- Liberalized List I (LLI), consisting of all goods that could be freely imported;

- Liberalized List II (LLII), comprising all goods whose importation required a license;

- Quota list (QL), comprising all items whose imports were subject to a quota.

The importation of a good that did not appear in any of the above mentioned lists was prohibited altogether. According to one set of



estimates <sup>10</sup> imports in the LLI, the LLII and the QL amounted to 17, 70 and 12 percent of the total value of imports in 1980 respectively.

In the 1981 import regime, two sets of reforms were introduced. Firstly, the QL was abolished. Approximately one third of items in the QL were transferred to LLI and the remaining quota items were transferred to LLII. Secondly, approximately 200 tariff positions, equivalent to 3.8 percent of the value of imports in 1980, which belonged to the license list were transferred to the LLI.

The reform of the import lists was accompanied by a number of other administrative reforms and the lowering of other taxes on imports such as the stamp duty from 25 to one percent, and guarantee deposits on imports from 25-40 percent to 7.5-15 percent. The new 1981 import regime remained in full force without major changes until December 1983, when a new set of far reaching liberalization measures were adopted by the Government.

The reform of the import regime enacted in December 1983-January 1984, represented a major break with the past. The measures introduced in this period affected three aspects of import policy, namely the redefinition of the import lists; tariff vs. non-tariff barriers; and the height of import barriers.

Import lists. The most significant feature of the 1984 import regime consisted of the transition from a "positive list" to a "negative list". Under the new regime, all commodities that were not explicitly prohibited could be imported. This was in sharp contrast to the previous

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10. See World Bank Report 5365-TU of August 1984.

regime which allowed the importation only of the those commodities that were explicitly mentioned in the Free or License Lists. Thus, now two import lists, the Prohibited List, and the License List, replaced the previous LLI and LLII. The Prohibited list initially included some 219 tariff positions consisting mostly of consumer goods. By May 1985, the Banned list was for all practical purposes abolished and the goods on the list were transferred either to the License List or became freely importable. Similarly, The License List initially comprised 369 items which accounted for 28 percent of 1984 imports. By 1987, the number of goods on the List was reduced to 111 or about 18 percent of total imports. In 1988, the list was further cut to 33 items.

However, the 1983/84 import regime introduced a new list, the so-called "levy" or "Fund" list. Goods on this list pay a specific dollar denominated surcharge in addition to custom duties and other trade taxes. The levy proceeds are channeled to the so-called extra-budgetary funds. The levies were initially supposed to serve two purposes. First, they were to finance social projects, such as mass housing, by taxing the importation of luxury goods. Second, the levies were to provide temporary protection to domestic industries that produced goods competing with those imports that were no longer subject to QRs. However, the scope of levies has since expanded far beyond the stated original intentions. In 1984, levies were applied to 200 goods and the implicit average tariff equivalent rate of levies stood at 2 percent. In 1987, more than 570 items were subject to levy with a tariff equivalent rate of 6.1 percent on average.

Simultaneously with the steps just mentioned, the 1983/84 reforms resulted in a large scale rationalization of tariff rates. The

overall import weighted average tariff rate for goods for which the rates were modified stood at 22.7 percent in 1984, compared to 38.8 percent prior to December 1983. With similar gradual reductions in the tariff rates in subsequent years, the average statutory tariff rate in Turkey is reasonably low today. The overall import weighted average tariff rate in 1987 stood at only 9.5 percent. The actual rate (defined as tariff revenues as a proportion of total imports) was even lower due to widespread exemptions granted to one or the other categories of users.

#### II.b. Export promotion

Export promotion constituted another focal point of the 1980 Government program. Export promotion was accomplished through three types of measures: (i) maintenance of a competitive real exchange rate; (ii) provision of direct subsidies; and (iii) simplification of the administrative and bureaucratic procedures.

The Government devalued the Turkish lira by more than 50 percent in nominal terms in 1980. At the same time, with few exceptions regarding agricultural inputs, it abrogated the multiple exchange rate system that had existed until then. Moreover, since 1980, the Government has adopted a policy of flexible exchange rate. Specifically, since 1981 daily adjustments have been made to prevent the appreciation of the lira.

The second type of assistance by the Government to the exporters has come through direct incentives. These consisted of:

(a) Export tax rebate. The rebate was initially to compensate exporters for indirect taxes on their inputs, but included a substantial subsidy element to the extent that the refund exceeded the actual taxes paid. After January 1985, with the introduction of the VAT and given that exports are zero rated, all the rebate is a pure export subsidy. In accordance with the the Government's declared objective of gradual phasing out of direct export incentives, the subsidy conferred by the export tax rebate scheme declined steadily during the period under examination.

(b) Duty drawbacks on imported inputs. Although duty free imports for exports do not constitute a subsidy in the GATT definition, they represent an important incentive to exporting as opposed to selling in the domestic market. The incentive content of duty drawbacks varies with the import content of exports in each industry. On average, during the 1980s it reached 5 percent of the value of exports for the manufacturing industry.

(c) Access to preferential credit. Credit to exporters at preferential rates of interest constituted an important incentive to exports during the early eighties when there existed a substantial difference between the general short term rate of interest and the rate of interest applied to export credits. However, the importance of this scheme dwindled gradually until it was finally abrogated in 1985. Effective from January 1987, a new export credit regime was instituted. Although no precise estimates on the subsidy content of the new scheme are available, evidence suggests that they were not very important. 11

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11. See Turkey, Country Economic Memorandum of August 5, 1988, Report no. 7378-TU.

(d) Cash grant financed by one or more of the so-called Extra Budgetary Funds (EBFs). In January 1985, the Government established the Resource Utilization and Support Fund (RUSF) with objective of encouraging exports by granting a 4 percent flat subsidy to all exporters. The cash grant was subsequently reduced to 2 percent and finally discontinued in November of the same year. However, starting in January 1987, the Government reintroduced the EBF subsidy to exports, this time from the Resource Utilization and Support Fund (RUSF). The RUSF subsidy, unlike its predecessor, is granted only to selected products in the form of specific dollar amounts.

What has been the outcome of these liberalization/promotion measures? As the discussion in the following pages will show, the outcome has been a substantial increase in the degree of openness of the manufacturing sector in Turkey. In the following sections an attempt will be made to determine to what extent the greater openness of the economy and the increased exposure to foreign competition have affected the performance and conduct of the Turkish industry.

### III. INDUSTRY-LEVEL ANALYSIS

#### III.a Data Preparation

Industry-level data were obtained from Turkey's State

Institute of Statistics (SIS)<sup>12</sup> and contained observations for the variables described below at the three-digit International Standard Industry Classification (ISIC), distinguished by ownership, namely private versus public firms. The variables are:

-labor input defined as total number of production persons. The entry does not distinguish various types of workers, such as by sex, age etc. Also no information is available on the number of working days lost due to strikes or other factors.

-total labor cost which comprises wages and other payments made by the employer such as overtime payment, bonuses, employers contribution to retirements funds, etc.

-total value of intermediate inputs at current prices.

-total value of output at current prices.

-beginning-of-year and end-of-year value of inventories of final output and intermediate inputs.

-sectoral output price deflators.

The original data were subsequently used to derive the value of a number of additional variables necessary for computations. The latter included the stock of capital and industry specific input price deflators.

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12. From 1973 to 1982, the data cover all manufacturing firms with 10 or more employees. From 1983 onwards, the data cover only firms with 25 employees or more. The change in coverage is not relevant for some industries with few large firms, but is important for others that comprise a large number of small, family concerns.

Capital stock series were constructed by using the perpetual inventory method. A complete description of the sources of data and the methodology is offered in K. Siddique (1989).<sup>13</sup> Sector specific input price deflators were computed by using input-output coefficients and output price deflators (For details of the methodology and data requirement see Siddique, op. cit).

Data on total value of imports and exports also classified according to ISIC were obtained from the UN Geneva data base. Foreign trade data, expressed originally in US dollars were converted into Turkish lira by using mid-year average exchange rates. Trade figures in local currency were then used to derive import penetration and export share series.

The next step involved the correction of the data for inflation distortion. This correction was necessary to make stock and flow variables comparable within a year by expressing all stocks and flows in mid-year current prices. Once the data were corrected for the inflation bias, they were expressed in real terms by deflating outputs and inputs by industry-specific output and input price deflators.

Most of the data series cover the period 1973-1985, although in the process of data transformation a number of years are lost. As a result our regression analyses in the following sections cover the years 1976 to 1985.

The list of industries in our sample is contained in Table 1. In order to study more closely the effect of trade liberalization on

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13. See "Data Requirement and Data Availability", chap. 4 of her PhD dissertation.

industry in Turkey, the industries were divided into three subgroups: exportables, importables, and non-tradables. In accordance with the methodology followed for other countries in this project, exportable industries were defined as all three-digit industries that showed an increase in exports during the sample period and whose average exports in 1984-85 was at least equal to 25 percent of their output. Industries 321, 322, 331, 332, 362, and 385 met this criterion. Among the remaining industries, importable industries were defined as those industries for which the share of imports in total domestic sales, defined as output minus exports plus imports, in 1984-85 exceeded 25 percent. Industries 351, 372, 382, and 384 fell in this category. All the remaining industries were ranked as non-tradables. The justification for choosing 1984-85 is that those represent the years most favorable to both export promotion and import liberalization in the entire sample period. Because the data refer to only three-digit industry disaggregation, some industries like 371 and 385 show both a high degree of import penetration and export share. However, because an industry is only classified in one category and the exportable industries were chosen first, both of the above were included among exportables. The above remarks make it clear that the classification chosen here, as any other classification that might have been adopted, is only approximate.

Tables 6-9 report the average export share and import share for the three group of industries and for all industries pulled together



over the period 1976-85.<sup>14</sup> The data show that export and import shares increase dramatically in all the three industry grouping, but more so in the tradable industries. The share of exports in the output of exportable industries increases from less than 4 percent in the 1970s to over 42 percent in 1985. Similarly, the share of imports in total domestic sales of the importable industries increases from its lowest level in 1979, 21 percent, to over 40 percent in 1985.<sup>15</sup>

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14. In the actual computation of the shares as well in subsequent regression analysis, industry 322 was omitted because of inconsistent trade figures. More precisely, during 1980-85, the value of exports exceeded the value of total output by as much as 100 percent towards the end of the sample period. This outcome may be explained by at least two factors: a) Trade data include all firms whereas output data exclude firms with less than 10 employees until 1982 and with less than 25 employees thereafter. Because in textile and clothing industry small establishments are common, output figures which exclude such establishments underestimate the true value of industry's output. b) The policy of subsidizing exports is well known to have induced a certain degree of overinvoicing of exports, especially in the textile and clothing industry.

15. Due to differing coverage of firms of trade and output data, export and import shares may be slightly exaggerated, but the trend is reliable. See footnote 14.

### III.b Analysis of price-cost margins

This section analyzes the relationship between the Turkish industry's price-cost margins and other aspects of her industrial structure for both the private and the public sectors. The price-cost margin is widely used as a measure of gross profitability in an industry. It expresses the gross return to fixed inputs, here assumed to be capital, as a share of the value of output. As a result, variations in the price-cost margin for an industry reflect both variations in net industry profitability and the average capital intensity of the industry in question.

It is easy to show that under constant returns to scale, the price-cost margin for a firm equals the mark-up of price over long-run average (and marginal) cost plus the net return to capital and depreciation. If all industries are perfectly competitive (price mark-up is zero) and if the rate of return to capital ( $r$ ) and the rate of depreciation of capital ( $d$ ) is the same for all firms in all industries, then price-cost margin for industry  $i$  equals  $(r+d)(K_i/Y_i)$ , where  $K$  is the total stock of capital and  $Y$  is the total value of output in industry  $i$  (see Schmalensee 1989). Thus, according to conventional theory a high price-cost margin, or equivalently a high rate of accounting profit in an industry is an indication of market power by at least some firms in that industry. If this is so, an increase in competitive pressure, say through import liberalization, should lower the industry's price-cost margin. However, there is substantial controversy in the literature as to whether high profits "are to be interpreted as a sign of good or bad performance" (Bresnahan 1989, p.1013). An unconventional interpretation of high profits is that they

are a sign of good performance because they indicate lower costs.<sup>16</sup> The truth is probably somewhere in the middle. In the case of Turkish industry for example, the combination of a capital-output ratio in the public sector which is two to three times higher than that in the private sector and considerably lower or even negative margins in the public sector is probably a good indication of poor performance by public enterprises rather than exploitation of market power by private firms, even though some firms in some industries might enjoy some market power.

Here the interest is focused on how changes in the trade regime in Turkey and exposure to international competition have affected the price-cost margins in various industries. The analysis is done at the three-digit industry level separately for private and public sectors for the period 1976-85. On the whole, there are 22 industries for the public sector and 24 industries for the private sector.<sup>17</sup>

The basic model to be tested is:<sup>18</sup>

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16. Schmalensee (1985) proposes a test for this alternative interpretation of high profits when working with disaggregated firm-level data. Here, because we are dealing with sectoral data his methodology is not applicable.

17. Industry 314 (tobacco processing) was also excluded from the regression analysis due to lack of complete data for the sample period.

18. For similar models see Journal of Industrial Economics, 1980, Vol. XXIX no.2 (December) dedicated to a symposium on international trade and industrial organization.

$$(1) \quad \text{PCM}_{it} = f(\text{IMP}_{it}, \text{KOR}_{it}, D_i, D_t)$$

$\text{PCM}_{it}$  = Price cost margin for industry  $i$  in year  $t$ . It is constructed as the value of output of each industry corrected for changes in final output inventories minus the value of intermediate inputs also corrected for changes in input inventories and total labor cost divided by the value of output.

$\text{IMP}_{it}$  = A measure of trade penetration defined as the share of imports in total apparent consumption for each industry and each year. Because greater competition from abroad is expected to reduce the monopoly power of domestic firms, it is generally expected that this variable has a negative sign.<sup>19</sup>

$\text{KOR}_{it}$  = Capital-output ratio for industry  $i$  in year  $t$ . It is constructed as the end-of-year capital stock of industry  $i$  divided by the real value of output of the same industry. Because price-cost margins are affected by industries' capital intensity, it is necessary to include this variable in the regression analysis. *Ceteris paribus*, one would expect this variable to be positively associated with the margin.

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19. It may be argued that because in equation 1 the denominator of variables PCM and KOR is output, import penetration should also be defined as the ration between imports and output. The regression results change very little if this other definition of import penetration is adopted.

$D_i$  = A set of dummy variables used to control for any omitted industry-specific effects that are likely to be present in every year. The number of industry dummy variables differs for public and private sectors. It is equal to the number of industries in which private or public firms are active less one.

$D_t$  = A set of nine dummy variables to control for any year-specific effects which are likely to affect all industries.

In the analysis of price-cost margins, it is customary to include among the explanatory variables an indicator of industry concentration ratio, such as Herfindahl index, on the assumption that firms in more concentrated sectors have greater market power and hence enjoy larger margins.<sup>20</sup> This variable is missing in the regression equations estimated here because industry concentration ratios were unavailable. However, because of the presence of industry dummy variables, the exclusion of the concentration ratio variable should be of a lesser loss than if these dummy variables were not included.

Overview. Before examining the regression results, it is interesting to look at average capital-output ratios and price-cost margins for the private and public sector. The average figures for all industries over the 1976-85 decade appear in Table 10. It immediately appears that on average the capital-output ratio is much higher in the public sector than in the private sector while public sector's price-

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20. For an alternative interpretation of positive correlation between concentration and PCM see Schmalensee (1985)

cost margin is below the private sector's. These results conform to given a priori knowledge of the Turkish industrial structure. For example, it is well known that state enterprises have historically been engaged in the most capital-intensive industries and the pursuit of profitability has not been one of their strengths. The figures in Table 3 also show that during the years of slow economic growth, namely 1978-80, the average capital-output ratio increases in both the private and the public sectors while the price-cost margin decreases. In the subsequent years this trend is reversed. More interestingly, there appears to be a narrowing of the gap between private and public firms due to a gradual but steady decline in the public sector's capital-output ratio.

Comparing the three industry grouping, several interesting results emerge from the data in Tables 11-13. First, although for all the three groups of industries public firms' capital-output ratio is greater than the private firms', the difference is more pronounced for the non-tradable industries.

Second, for both the private sector and the public sector, the average capital-output ratio for non-tradables is higher than for tradables, and within the latter exportables show a higher capital-output ratio than importables. The latter result is of course no indication that Turkish exports are relatively more capital intensive than Turkish imports, because the correct measure of relative factor intensity is the average capital labor ratio and not capital output ratio. The former ratios were computed for export and import competing industries and are also reported in the last two columns of Tables 11 and 12. The data show clearly that Turkish importables are more capital

intensive than Turkish exportables irrespective of whether public or private enterprises are taken into account. 21

Third, compatible with capital-output ratios, for both the private sector and the public sector the price-cost margin is higher in the non-tradable industries than in the tradable industries. However, within the tradable industries, private firms do not show any appreciable difference between the price-cost margin between importables and exportables. For the public sector on the other hand, the price-cost margin is systematically higher in the exportable industries than in the importable industries. This result, which runs contrary to the observed pattern of capital-output ratio in the two groups of industries, indicates that private firms are more or less equally profitable in the two sectors, whereas public firms in import competing industries are less efficient and less profitable than public enterprises in the export sectors. In fact, the difference between private and public firms in terms of both average capital output ratio and average price-cost margin is the least in the exportable industries. Public firms also seem to perform better in the non-tradable industries than in the importable industries. This result may be attributed to the fact that public firms in import competing industries have historically had a high degree of protection, even after the liberalization of the 1980s, which has allowed them to continue to operate at very low level of efficiency and

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21. Notice that in the presence of intermediate inputs, the correct measure of Capital-labor ratio is the direct capital-labor ratio for gross output and the total (direct plus indirect) capital-labor ratio for net output. See Derr (1979).

profitability. Higher margins for private firms in non-tradables than in the tradables seem to be mostly due to differing capital-output ratios in the two groups of industries.

Regression Results. The regression analysis of price-cost margins was done by pooling all industries, but maintaining the distinction between private and public sectors. The results are reported in Tables 14 and 15. Four models are specified for both the private sector and the public sector. In all four models the variable for trade penetration is the share of imports in total domestic consumption. Model 1 and 2 differ in that model 2 includes one additional variable, KOR.IMP, which allows for the effect of import penetration to vary with the degree of capital intensity of an industry. If this variable is significant, it implies that import penetration affects relatively more the capital intensive industries. Models 3 and 4 are exact replicas of models 1 and 2 with the exception of the exclusion of the industry dummy variables.

The first columns of Tables 14 and 15 report the results of Model 1. For the private sector, both import penetration and capital output ratio have the expected sign although the latter is not significant. For the public sector, import penetration has the expected sign but is not significant. The capital output ratio has a negative sign but is also insignificant. The results are not greatly modified for the private sector in model 2. For the public sector, however, variable KOR.IMP is significant and negative, indicating that import penetration has reduced the margins in the public sector in the most capital intensive industries.



A glance at the regression results of models 3 and 4 for both sectors reveals that most of the explanatory power of the basic model derives from industry dummy variables. When these are excluded the adjusted  $R^2$  for both the private and the public sectors is greatly reduced while generally the level of significance of the remaining variables increases. When industry dummy variables are excluded, import penetration variable for the private sector becomes insignificant while the variable KOR.IMP in model 4 becomes significant and negative, indicating that import penetration has indeed exerted a more powerful impact on those industries that were more capital intensive. For the public sector, on the other hand, it is now the import penetration variable that becomes significant. Variable KOR continues to have a negative sign.

Summarizing, it appears that in Turkey greater exposure to international trade has exerted some effect on market power of firms both in the private and the public sectors. For the private sector, when industry specific effects are allowed for, greater import penetration appears to affect all industries in the same way; when industry specific effects are excluded, greater import penetration appears to affect the margins only in the capital-intensive industries. In both cases the impact of trade penetration on the margins is quite small indicating most likely that Turkish private manufacturing industry did not enjoy a significant market power even prior to the 1980s reforms<sup>22</sup>. In the public sector, when industry dummy variables are included, import discipline appears to have affected relatively more the capital intensive industries. Vice versa when these variables are excluded, it is the import penetration variable rather than the interactive term to

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22. See Foroutan (1990) forthcoming.

become significant. Also in the public sector the coefficient of the import penetration variable is relatively small, although higher than in the private sector. The negative sign for the variable capital-output ratio in the public sector conforms to the earlier finding that public enterprises are more concentrated in capital intensive, non-profitable industries. Finally, the significance of industry dummy variables and time dummy variables is a clear indication that studies that do not include these variables suffer from a serious shortcoming.<sup>23</sup>

### III.c Analysis of Productivity

The relation between total factor productivity growth in Turkish industry and its trade policy during the 1976-85 period is examined in this section. Total factor productivity growth is a measure of industry performance that proxies the efficiency with which factors are used. TFP growth is computed as the rate of growth in real gross output minus a weighted average of the rates of growth of individual inputs where the weights are the average share of each input in total value of output over the period t-1 to t, namely:

$$(2) \quad TFP_{it} = \hat{Q}_{it} - \left\{ \overline{SL}_{it} \hat{L}_{it} + \overline{SK}_{it} \hat{K}_{it} + \overline{SM}_{it} \hat{M}_{it} \right\}$$

Q is the the real gross output,  $\overline{SL}$ ,  $\overline{SK}$ , and  $\overline{SM}$  refer to the

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23. See for example the references cited in the previous note.

average share of labor, capital, and raw materials in total value of output respectively and are defined as:

$$(3) \quad \overline{SL}_{it} = 1/2 \left\{ (P_{it}^L L_{it} / P_{it} Q_{it}) + (P_{it-1}^L L_{it-1} / P_{it-1} Q_{it-1}) \right\}$$

$$(4) \quad \overline{SK}_{it} = 1/2 \left\{ (P_{it}^K K_{it} / P_{it} Q_{it}) + (P_{it-1}^K K_{it-1} / P_{it-1} Q_{it-1}) \right\}$$

$$(5) \quad \overline{SM}_{it} = 1/2 \left\{ (P_{it}^M M_{it} / P_{it} Q_{it}) + (P_{it-1}^M M_{it-1} / P_{it-1} Q_{it-1}) \right\}$$

$\Delta$  over a variable indicates the growth rate of the relevant variable from period t-1 to period t. Subscript i refers to industry and superscript L, K, and M refers to labor, capital and intermediate inputs, respectively.  $P_i$  indicates the price of output in industry i.

Overview. In the first stage of the analysis, the observation period is divided into two subperiods. The first subperiod covers the five-year term up to 1980 and is characterized by the crisis of the late 1970s including recession, high inflation and an inward looking trade regime. The second subperiod from 1981 to 1985 includes the period of radical reform in economic policy marked by a significant liberalization of foreign trade, especially in the form of removal of QRs on imports and substantial promotion of exports. The summary results appear in Table 17.

During 1976-80, for both private and public enterprises, the average TFP growth was negative. However, the decline in productivity in the public sector (-7.5 percent per year) was stronger than the fall in productivity in the private sector, (-4.1 percent per year). During the second subperiod from 1981 to 1985, both these trends are reversed. The growth in TFP in both private and public enterprises turns positive, but

the TFP growth of public firms surpasses that of private enterprises (5.7 percent in the former and 3.4 percent in the latter). Looking at individual results (Table 16), among the 26 industries listed, only 4 registered positive TFP growth within the private sector and 3 within the public sector during 1976-80. On the other hand, in the next subperiod, only five industries within the private sector and five industries within the public sector show negative TFP growth.

In the second stage of the analysis, the observation period was divided into three subperiods, namely 1976-78, 1979-80, and 1981-85, in order to isolate the effect of the debt crisis years which coincide with the second subperiod. The debt crisis of 1979-80 led to a substantial fall in output, a three-digit rate of inflation, and a considerable fall in the value of foreign trade. Other than TFP growth rates for private and public industry in the three aforementioned subperiods, the rate of growth for output, labor, capital and intermediate inputs were also computed. This was done for all the industries as a whole as well as for the three industry groupings, namely exportables, importables and non-tradables. The purpose of calculating growth rates for the latter variables was to see the relation of each individual variable with the the TFP growth pattern. As expected, output growth rate is strongly correlated with the TFP growth for both public and private firms (see Table 18).

Summary results of the computations appear in Tables 19-22. Considering all the industries, during the first subperiod, 1976-78, productivity growth is modestly positive in the private sector and modestly negative in public sector. In the second subperiod, 1979-80, the years of economic crisis, productivity growth is strongly negative, as is the output growth. Despite the decline in output in this period, employment and the

stock of capital continue to rise both in the private and the public sectors, indicating the difficulty in adjusting input to output growth in the short to medium run. Finally, during the third subperiod, 1981-85, productivity growth is positive and higher in the public than in the private sector. The higher productivity growth in the public sector is due to a high increase in output accompanied by a very modest increase in inputs. It appears that the economic reforms of the 1980s, especially the reform of state economic enterprises including their increased autonomy in terms of resource management, is responsible for the improved productivity performance of the public firms.

Comparing the results for the three industry groupings, again one can detect a number of interesting results. First, for the private sector, the rate of growth of total factor productivity during the 1980s following the liberalization of foreign trade, is much higher for exportable industries (5%) and importable industries (4.8%) than for non-tradables (1.9%). This result can be interpreted as a clear indication that exposure to international competition has had a positive impact on productivity growth of private enterprises. In fact, the contribution of TFP growth to output growth for the private sector during the period 1981-85 in exportable industries, importable industries, and non-tradable industries is respectively equal to 26%, 30%, and 17%. The same pattern is not true for the public sector. The average productivity growth of public enterprises during the 1980s is higher in non-tradable sectors (6.5%) than in the tradable sectors (4.3% in exportable industries and 4.7% in importable industries). Also, in relative terms, TFP growth for public enterprises contributes 92% to output growth in non-tradable industries higher than 30% in importable industries, but lower than 159% for

exportable industries. These results again indicate that the reform of public enterprises in Turkey during the 1980s must have had a positive effect on productivity at least as important as exposure to foreign competition. Second, despite what one may expect, trade liberalization does not appear to have had a negative impact on labor employment. During the 1980s, employment in the private sector as a whole increases by 5.1% and decreases very slightly in the public sector (-0.7%). However, because the share of public enterprises in total industrial output is only around 25 percent (see Tables 2-5), this means an overall increase in the level of labor employment in industry. More interestingly, employment in the private sector not only increases in exportable industries, it does so also in import competing and non-tradable industries. In the public sector employment during the 1980s increases only in the importable industries, but it declines in the exportable and non-tradable industries. The trend in employment in public enterprises most likely reflect the state of overmanning prior to the 1980s reform. The overall trend in employment in the Turkish industrial sector appears to confirm Choksi, Michaeli and Papagergiou's (forthcoming) conclusion that trade liberalization does not appear to have affected negatively labor employment in the developing countries.<sup>24</sup>

Regression results. The next step in the TFP analysis consisted of relating the observed trend in the TFP growth in Turkey to changes in the trade regime. For the regression analysis all three industry grouping were

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24. This outcome is all the more outstanding remembering that the data used in this paper tend to underestimate the growth in labor employment for the period 1983 to 1985. See footnote 14.

pulled together but the distinction between private and public was retained. Two sets of regressions were implemented. In the first, the following equation was estimated for both the private sector and the public sector:

$$(6) \quad TFP = f(\hat{Q}_{it}, \hat{m}_{it}, D_i, D_t)$$

Growth in total factor productivity is related to the rate of growth in output ( $\hat{Q}$ ), the rate of growth in import penetration ( $\hat{m}$ ) measured as the share of imports in total domestic absorption<sup>25</sup>, and a set of industry and year dummy variables. Output growth is intended to capture scale effects and variations in capacity utilization. If economies of scale are present and/or if production capacity is underutilized, output growth is expected to have a positive sign. Import penetration rates are intended to capture the effect of exposure to foreign competition on efficiency. If exposure to foreign competition forces domestic firms to maximize production efficiency, the growth in import penetration is also expected to be positively related to TFP growth. As with the regression analysis of price-cost margins, industry and year dummy variables are included to control for industry-specific and time-specific factors.

The estimation results of equation 6 for the private sector for the periods 1976-77 to 1984-85 are reported in Table 23. The two models in Table 23 differ only in that Model 2 does not include the industry dummy

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25. If export penetration ratio is also included in the same equation or if it replaces import penetration, its coefficient is never significant for either the private or the public sectors.

variables. The results of Model 1 indicate that growth in output is the most powerful explanatory variable in this model. However, growth in import penetration also has a significant albeit modest effect on the TFP growth in the private sector. The results of Model 2 indicate that unlike in the price-cost margin regressions, industry dummy variables are insignificant. The negative sign on year dummy variables indicate that, relative to 1976-77, productivity growth was lower in all the subsequent periods.

Table 24 contains the regression results of equation 6 for the public sector. Except for the effect of import penetration, the results are very similar to those for the private sector. Here, however, growth in import penetration has a negative albeit statistically insignificant coefficient. This result indicates that exposure to greater competition from abroad has exerted no significant effect on the productivity performance of public enterprises. This outcome confirms the earlier findings that the productivity growth in public firms was more affected by their internal reform, including the freedom of the management to determine the level of employment and set output prices, than by exposure to foreign competition. Moreover, as noted earlier, some public enterprises, especially in import competing industries, continued to enjoy a relatively high level of protection through non-tariff barriers.

The second set of regressions are based on a standard demand decomposition model. To see the rationale for demand side decomposition let us start with identity (7) which states that total domestic output either satisfies domestic demand, which is equal to total demand (D) minus imports (M), or is exported (X).

$$(7) \quad Q_t = D_t - M_t + X_t$$



Given the definition of import penetration ratio,  $m_t = M_t/D_t$ , with a little manipulation it is easy to show that:

$$(8) \quad \hat{Q}_t = s_d \hat{D}_t - s_m \hat{m}_t + s_x \hat{X}_t$$

where  $s_d = (1-m)D/Q$  : share of domestic demand in total output

$s_m = mD/Q$  : share of imports in total output

$s_x = X/Q$  : share of exports in total output

Thus total output growth,  $G$ , can be decomposed into three components:

$$(9) \quad G = X1 - X2 + X3$$

where  $X1$ ,  $X2$ , and  $X3$  represent respectively output growth due to domestic demand growth, import penetration growth, and export demand growth.

With this demand decomposition it is possible to test whether the growth of output originating from domestic demand, exports, or import penetration affects productivity in a different manner. Thus the next set of regressions for both the private and the public sectors in Turkey is based upon the estimation of the following equation:

$$(10) \quad TFP = f(X1, X2, X3, D_i, D_t)$$

If higher exports or higher import penetration, or in other words greater openness, do not affect productivity, one expects the coefficients of variables  $X1$ ,  $X2$  and  $X3$  to be exactly the same, except for the negative sign on  $X2$ . On the other hand, if higher import penetration or higher

exports do have a positive effect on productivity beyond their impact on domestic output, then one would expect to find a higher coefficient for X3 than for X1 and a lower absolute value for the coefficient of X2 than for X1.

The estimation results of equation 10 for the private and public sector are reported in Tables 25-26. Because separate trade data for the public and private enterprises are unavailable, X1-X3 are computed by summing together private and public sector output for each industry.

The regression results for the private sector are contained in the first part of Table 25. There appears to be no significant difference between the coefficients of variables X1-X3 indicating that import or export growth exert no significant effect on productivity performance of the private sector. This result appears to contradict the earlier finding that greater import penetration affected positively, albeit modestly, the productivity performance in the private sector. The contradiction

disappears if in equation 10 the rate of growth of imports,  $\hat{m}$ , is included as an additional explanatory variable in equation 10 (model 2 in Tables 25

and 26). If import share is constant, variables X2 and  $\hat{m}$ , would be

perfectly collinear. However, because import share is not constant, the model is identified. As with equation 6, this new variable has a positive and statistically significant coefficient. This result means that the growth in import penetration affects positively the productivity growth in the private sector, but that the F-test fails to detect any significant difference between the various components of demand on productivity. The reason is the following. Let us assume that the true relation between

productivity and various components of demand is given by:

$$(11) \quad TFP = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 \hat{m}$$

Since  $\hat{m} = X_2/s_m$ , equation 11 can be rewritten as:

$$(12) \quad TFP = a_0 + a_1 X_1 + a_2 X_2 + a_3 X_3$$

where  $a_0 = \beta_0$

$$a_1 = \beta_1$$

$$a_2 = (\beta_2 + \beta_4/s_m)$$

$$a_3 = \beta_3$$

When  $\beta_4$  is positive, the absolute value of  $a_2$  is smaller when growth in import penetration is excluded from the regression. However, if  $\beta_4/s_m$  is small, the F-test rejects the hypothesis that  $a_2$  and  $a_1$  are statistically different from each other and growth in import penetration appears to have no significant impact on productivity.

The estimation results of equations 11 and 12 for the public sector appear in Table 26. The results are similar to those for the private sector except for the coefficient of  $X_3$ . Also in accordance with previous findings, when growth in import penetration is included as an independent variable, its coefficient is negative but not significant. These results once more show that trade policy has not had a great impact on the productivity of Turkish public enterprises. Notice that the fit of equations 11 and 12 for the public sector is not very good because the components  $X_1$ ,  $X_2$ , and  $X_3$  are computed from total output and the share of the public sector in total output is low.

### III.d Comparison With Earlier Findings

To my knowledge, for Turkey the relation between trade policy and industry conduct as represented by the evolution of price-cost margins has not been addressed in the English language literature. There exist, however, some studies on the relation between trade policy and productivity performance in Turkey. Here a brief description of the main findings of these studies is presented and an attempt is made to compare the results of earlier studies with those obtained in the present paper.

A first study evaluating the effect of trade policy in Turkey on the productivity of Turkish industry is that by Krueger and Tuncer (1980) (henceforth referred to as KT). KT compute the rate of growth of TFP in the Turkish manufacturing industries during 1963-1976 separately for the private sector and public sector. They subdivide the period covered into four subperiod, namely 1963-67, 1967-70, 1970-73, and 1973-76. The first and the third subperiod represent years of relatively more liberal trade policies whereas the second and the fourth subperiod represent years of severe import restriction. KT find that, compared to some developed countries, TFP growth was on the whole modest in Turkey over the entire period (2.1%) considered. More interestingly, they find that TFP growth slowed down considerably during period of stringent import restriction. KT conclude that their findings provide evidence that "productivity growth might uniformly be more rapid during periods of liberalization of the foreign trade regime than during periods of severe foreign exchange shortage" [ibid p.4]. Thus, although the period covered by the KT study differs from that in the present paper, the inference about the positive effect of trade liberalization on TFP growth in industry confirms the findings reported here.

Another finding by KT which is also similar to that of this paper is the relatively more rapid rate of TFP growth in the public sector. Although results differ greatly from one industry to another, KT find that on average the TFP growth in the public sector (2.65%) for the period 1963-76 outpaces the TFP growth in the private sector (1.84%). Despite several attempts, KT are not able to provide a satisfying explanation for this seemingly paradoxical result. They are, however, able to infer something about the absolute level of efficiency in the two sector. KT find that in general public enterprises had a higher level of labor and capital input per unit of output. On the other hand, public enterprises were able to purchase material inputs at subsidized prices. Had these enterprises faced the same cost for their intermediate inputs, their level of efficiency, as measured by the unit ratio of capital, labor, and material input in the public sector relative to that in private sector, would have been lower than in the private enterprises.

Another study examining the relation between trade orientation and productivity growth in Turkey is that by Nishimizu and Robinson (1984). Nishimizu and Robinson analyze the relation between the growth in total factor productivity and trade orientation in four countries: Korea, Turkey, Japan, and Yugoslavia. The analysis for Turkey covers the period 1963 to 1976 for 13 broadly defined industries without distinguishing public from private enterprises. For each industry the rate of growth of TFP is regressed on output growth allocated between export expansion and import substitution. The results show that for 9 out of 13 industries TFP growth was significantly and positively correlated to export expansion whereas for 4 out of 13 industries import substitution was negatively and significantly correlated to TFP growth. During this period Turkey was a

relatively closed economy with exports accounting for less than 4 percent of total manufacturing output and imports contributing to only 11 percent of domestic supply of manufacturing output. Total factor productivity growth was therefore modest during this period increasing on average by 1.3 percent per year and contributing to 12 percent of output growth.

A third study worth mentioning is the World Bank Audit Report (1988) evaluating SALs IV and V. This report addresses the issue of productivity in the public sector in Turkey during the 1980s. By examining the evolution of labor productivity, defined as real output per employee, during 1982-86, the Report concludes that "improvements in SEE [State Economic Enterprises] profitability are due to price increases, not to efficiency gains" (page 84). This conclusion clearly contrasts with the findings of this paper. A number of reasons explain the contrasting conclusions. First, the results of the above-mentioned report are based on labor productivity as opposed to total factor productivity. Second, and more importantly, the data used in the above report apparently refer to all SEEs whereas the data used here refer only to manufacturing SEEs. Thus both the real output and the number of employees in the present paper are only a fraction of those contained in the above report. However, for the sake of comparison I also calculated labor productivity as defined in the Bank report for both the private sector and the public sector. The results are reported in Tables 26 and 27. The numbers clearly show that after a historic low in 1979-80, labor productivity rises sharply in both the private sector and in the public sector. More interestingly, in conformity with earlier results, labor productivity in the public sector rises faster and its level is above that in the private sector during the 1980s.

In summary, the findings in the present paper appear to confirm earlier findings that trade liberalization is associated with improvement

in productivity in Turkey's manufacturing industry. Moreover, improvement of productivity in the public sector is attributable not only to trade liberalization but also a host of reforms of public enterprises.

### III. e Conclusions

The results of the analysis contained in the present paper indicate that trade liberalization and greater exposure to international competition have generally had a beneficial effect on the Turkish industry during the 1980s. The effect of international competition, however, appears to be significant mainly in the private sector, especially in tradable industries. In the first half of the 1980s, international competition has decreased the price-cost margin and increased the rate of growth of productivity in the private sector. In the public sector, higher trade penetration appears to have lowered the price-cost margin in the public enterprises that had a higher-than-average capital intensity. Trade penetration shows no impact on the productivity performance of the public sector. Productivity improvement in public enterprises appears to be more related to other factors, most likely the reform of the management of these enterprises.

Table 1

<u>Industrial Classification Code</u>	<u>Industrial Activity</u>
311, 312	Food processing
313	Beverage
314	Tobacco
321	Textile
322	Wearing apparel
323	Fur and leather products
324	Leather shoes
331	Wood and cork
332	Furniture & fixture
341	Paper and paper products
342	Printing and publishing
351	Industrial chemicals
352	Other chemicals
353	Petroleum and coal
354	Petroleum derivatives
355	Rubber products
356	Plastic
361	Ceramics and porcelain
362	Glass and glass products
369	Other non-metal products
371	Iron and steel
372	Non-ferrous metals
381	Metal products
382	Non-electric machinery
383	Electric machinery
384	Transport equipment
385	Professional equipment



TABLE 2

AVERAGE SHARE OF PRIVATE (ASPR) AND PUBLIC (ASPU) FIRMS  
IN TOTAL INDUSTRIAL OUTPUT, 1976-1985

OBS	YEAR	ASPR	ASPU
1	1975	0.721674	0.278326
2	1976	0.740659	0.259341
3	1977	0.724289	0.275711
4	1978	0.752052	0.247948
5	1979	0.753372	0.246628
6	1980	0.754654	0.245346
7	1981	0.743426	0.256574
8	1982	0.766957	0.233043
9	1983	0.765165	0.234835
10	1984	0.768931	0.231069
11	1985	0.760505	0.239495

TABLE 3

AVERAGE SHARE OF PRIVATE (ASPR) AND PUBLIC (ASPU) FIRMS  
IN TOTAL OUTPUT OF EXPORTABLE INDUSTRIES

OBS	YEAR	ASPR	ASPU
1	1976	0.840750	0.159250
2	1977	0.830160	0.169840
3	1978	0.862868	0.137132
4	1979	0.857863	0.142137
5	1980	0.836718	0.163282
6	1981	0.815149	0.184851
7	1982	0.874955	0.125045
8	1983	0.857638	0.142362
9	1984	0.870658	0.129342
10	1985	0.818399	0.181601

TABLE 4

AVERAGE SHARE OF PRIVATE (ASPR) AND PUBLIC (ASPU) FIRMS  
IN TOTAL OUTPUT OF IMPORABLE INDUSTRIES

OBS	YEAR	ASPR	ASPU
1	1976	0.768374	0.231626
2	1977	0.696982	0.303018
3	1978	0.750455	0.249545
4	1979	0.775547	0.224453
5	1980	0.774497	0.225503
6	1981	0.766003	0.233997
7	1982	0.777076	0.222924
8	1983	0.783287	0.216713
9	1984	0.788850	0.211150
10	1985	0.790460	0.209540

TABLE 5

AVERAGE SHARE OF PRIVATE (ASPR) AND PUBLIC (ASPU) FIRMS  
IN TOTAL OUTPUT OF NON-TRADABLE INDUSTRIES

OBS	YEAR	ASPR	ASPU
1	1976	0.664083	0.335917
2	1977	0.664565	0.335435
3	1978	0.688629	0.311371
4	1979	0.682873	0.317127
5	1980	0.692831	0.307169
6	1981	0.685197	0.314803
7	1982	0.696513	0.303487
8	1983	0.699822	0.300178
9	1984	0.698908	0.301092
10	1985	0.708396	0.291604

TABLE 6

TRADE PENETRATION RATIOS 1976-85

OBS	YEAR	AXSHARE	AMSHARE
1	1976	1.8941	15.4643
2	1977	1.5995	14.7307
3	1978	1.6387	10.9462
4	1979	1.6954	10.1034
5	1980	2.9405	12.4574
6	1981	6.8825	13.0226
7	1982	10.0012	13.6607
8	1983	9.1189	13.3348
9	1984	13.3050	17.0171
10	1985	19.0618	18.3276

AXSHARE=SHARE OF EXPORTS IN TOTAL OUTPUT  
AMSHARE=SHARE OF IMPORTS IN TOTAL APPARENT DOMESTIC  
CONSUMPTION, DEFINED AS OUTPUT+IMPORTS-EXPORTS

TABLE 7

AVERAGE SHARE OF EXPORTS (AXSHARE) AND IMPORTS (AMSHARE)  
IN TOTAL OUTPUT OF EXPORTABLE INDUSTRIES  
IN % TERMS

OBS	YEAR	AXSHARE	AMSHARE
1	1976	3.9293	19.7575
2	1977	3.6639	19.8307
3	1978	3.8270	14.4596
4	1979	3.8087	11.9783
5	1980	6.3960	17.0996
6	1981	15.2136	18.5571
7	1982	23.5270	19.4807
8	1983	20.7087	18.8979
9	1984	29.7332	22.2022
10	1985	42.2294	25.3638

TABLE 8

AVERAGE SHARE OF EXPORTS (XSHARE) AND IMPORTS (MSHARE)  
IN TOTAL OUTPUT OF IMPORTABLE INDUSTRIES  
IN % TERMS

OBS	YEAR	AXSHARE	AMSHARE
1	1976	1.8771	35.5776
2	1977	1.6279	32.4762
3	1978	1.2386	24.0555
4	1979	1.1427	21.0782
5	1980	2.4416	25.2792
6	1981	4.4357	29.8413
7	1982	7.1163	32.5161
8	1983	7.4535	31.2197
9	1984	9.5345	38.2476
10	1985	14.0271	40.8900

TABLE 9

AVERAGE SHARE OF EXPORTS (AXSHARE) AND IMPORTS (AMSHARE)  
IN TOTAL OUTPUT OF NON-TRADABLE INDUSTRIES  
IN % TERMS

OBS	YEAR	AXSHARE	AMSHARE
1	1976	0.95559	5.53856
2	1977	0.65746	5.47233
3	1978	0.83680	3.95453
4	1979	1.00968	4.91855
5	1980	1.64123	4.81153
6	1981	4.03964	3.46928
7	1982	4.78966	3.21431
8	1983	4.42091	3.78402
9	1984	7.54774	6.34838
10	1985	9.79160	6.68571

TABLE 10

AVERAGE CAPITAL-OUTPUT RATIO AND PRICE-COST  
MARGIN IN THE PRIVATE AND PUBLIC SECTORS 1976-85

OBS	YEAR	AKORPR	APCMR	AKORPU	APCMU
1	1976	0.446486	0.178182	1.39313	0.212863
2	1977	0.486885	0.211588	1.64282	0.110886
3	1978	0.487306	0.235953	2.40332	0.112628
4	1979	0.593754	0.186188	1.39351	0.077184
5	1980	0.742177	0.203650	1.75668	0.011172
6	1981	0.569563	0.208442	1.62152	0.128247
7	1982	0.505812	0.227981	1.77228	0.184682
8	1983	0.540500	0.200874	1.53982	0.191851
9	1984	0.542396	0.207466	1.46398	0.123604
10	1985	0.514882	0.189682	0.89707	0.155903

TABLE 11

AVERAGE CAPITAL-OUTPUT RATIO, CAPITAL-LABOUR RATIO  
AND PRICE-COST MARGINS OF PRIVATE AND PUBLIC FIRMS  
IN EXPORTABLE INDUSTRIES

OBS	YEAR	AKORPR	APCMR	AKORPU	APCMU	AKLPR	AKLPU
1	1976	0.580456	0.155202	0.683867	0.13809	1274.50	1126.28
2	1977	0.669309	0.197787	0.639049	0.12059	1415.71	1047.68
3	1978	0.585734	0.240367	0.866950	0.23156	1256.78	1191.52
4	1979	0.694064	0.175666	0.932526	0.14006	1375.01	1209.82
5	1980	0.952137	0.191397	0.963214	-0.20298	1457.19	1378.59
6	1981	0.649498	0.192316	0.746329	0.01174	1408.68	1438.77
7	1982	0.539446	0.201122	0.957154	0.31630	1394.06	1754.64
8	1983	0.535004	0.172590	0.713704	0.19944	1403.04	1485.12
9	1984	0.498329	0.197079	0.755367	0.10753	1395.49	1688.32
10	1985	0.469841	0.178169	0.578339	0.21349	1347.59	1730.17

AKORPR=AVERAGE CAPITAL-OUTPUT RATIO IN THE PRIVATE SECTOR  
 AKORPU=AVERAGE CAPITAL-OUTPUT RATIO IN THE PUBLIC SECTOR  
 APCMR=AVERAGE PRICE-COST MARGIN IN THE PRIVATE SECTOR  
 APCMU=AVERAGE PRICE-COST MARGIN IN THE PUBLIC SECTOR  
 AKLPR=AVERAGE CAPITAL-LABOR RATIO IN THE PRIVATE SECTOR  
 AKLPU=AVERAGE CAPITAL-LABOR RATIO IN THE PUBLIC SECTOR

TABLE 12

AVERAGE CAPITAL-OUTPUT RATIO, CAPITAL-LABOUR RATIO  
AND PRICE-COST MARGINS OF PRIVATE AND PUBLIC FIRMS  
IN IMPORTABLE INDUSTRIES

OBS	YEAR	AKORPR	APCMR	AKORPU	APCMU	AKLPR	AKLPU
1	1976	0.309713	0.166433	1.24271	0.114464	1559.14	2080.71
2	1977	0.322264	0.171696	0.72523	0.094775	1693.09	2149.86
3	1978	0.343430	0.243047	1.18151	-0.048879	1859.98	2148.58
4	1979	0.433601	0.159921	1.26221	-0.014781	1872.60	2229.74
5	1980	0.521486	0.201852	1.28301	-0.079552	1962.52	2203.47
6	1981	0.432535	0.179306	1.01133	-0.050858	2124.03	2232.10
7	1982	0.406763	0.235824	0.97805	0.135739	2137.37	2266.96
8	1983	0.388929	0.164868	0.94840	0.111884	2302.07	2102.01
9	1984	0.369391	0.181966	0.83336	0.093228	2388.31	2135.33
10	1985	0.405910	0.172139	0.82107	0.059929	2695.85	2143.64

TABLE 13

AVERAGE CAPITAL-OUTPUT RATIO AND PRICE COST MARGINE  
OF PRIVATE AND PUBLIC FIRMS IN NON-TRADABLE INDUSTRIES

OBS	YEAR	AKORPR	APCMR	AKORPU	APCMU
1	1976	0.420770	0.192049	1.34678	0.300481
2	1977	0.463053	0.220253	2.16261	0.141636
3	1978	0.478445	0.217046	3.33284	0.126357
4	1979	0.575112	0.197578	1.48524	0.038053
5	1980	0.673856	0.190084	2.02724	-0.021055
6	1981	0.538128	0.234080	2.01738	0.202471
7	1982	0.481381	0.246952	2.20898	0.237747
8	1983	0.550217	0.234613	1.94025	0.243315
9	1984	0.585416	0.225677	1.79802	0.181423
10	1985	0.536734	0.203223	0.96472	0.212998

AKORPR=AVERAGE CAPITAL-OUTPUT RATIO IN THE PRIVATE SECTOR  
AKORPU=AVERAGE CAPITAL-OUTPUT RATIO IN THE PUBLIC SECTOR  
APCMR=AVERAGE PRICE-COST MARGIN IN THE PRIVATE SECTOR  
APCMU=AVERAGE PRICE-COST MARGIN IN THE PUBLIC SECTOR  
AKLPR=AVERAGE CAPITAL-LABOR RATIO IN THE PRIVATE SECTOR  
AKLPU=AVERAGE CAPITAL-LABOR RATIO IN THE PUBLIC SECTOR

Table 14  
 Regression Estimates for the Private Sector  
 Dependent Variable: PCM; t-values in parentheses

Independent Variables	Model 1	Model 2	Model 3	Model 4
Intercept	0.335 (3.7)	0.332 (3.7)	0.109 (6.0)	0.096 (5.0)
KOR	0.000 (0.0)	-0.002 (0.1)	0.160 (9.0)	0.181 (9.1)
IMP	-0.002 (1.8)	-0.002 (1.8)	-0.000 (0.8)	0.001 (1.5)
KOR.IMP		0.000 (0.2)		-0.002 (2.2)
<u>Year Dummy Variables</u>				
1977	0.031 (1.9)	0.031 (1.9)	0.027 (1.2)	0.027 (1.2)
1978	0.048 (2.8)	0.048 (2.8)	0.050 (2.2)	0.050 (2.3)
1979	-0.004 (0.2)	-0.004 (0.2)	-0.017 (0.7)	-0.016 (0.7)
1980	0.018 (1.0)	0.018 (1.0)	-0.022 (1.0)	-0.019 (0.9)
1981	0.025 (1.5)	0.025 (1.5)	-0.010 (0.4)	0.010 (0.5)
1982	0.046 (2.8)	0.046 (2.8)	0.090 (1.8)	0.036 (1.8)
1983	0.018 (1.1)	0.019 (1.1)	0.007 (0.3)	0.005 (0.2)
1984	0.032 (1.9)	0.032 (1.9)	0.014 (0.6)	0.010 (0.5)
1985	0.017 (1.0)	0.017 (1.0)	0.001 (0.0)	-0.003 (0.1)
<u>Industry Dummy Variables</u>				
311	-0.233 (2.5)	-0.231 (2.7)		
313	-0.013 (0.0)	-0.009 (0.1)		
321	-0.160 (1.9)	-0.156 (1.8)		
323	-0.261 (2.8)	-0.258 (3.0)		
324	-0.274 (2.8)	-0.271 (3.1)		
331	-0.185 (2.0)	-0.181 (2.1)		
332	-0.167 (1.7)	-0.164 (1.9)		
341	-0.083 (0.8)	-0.080 (1.0)		
342	-0.095 (0.9)	-0.092 (1.0)		
351	-0.038 (0.4)	-0.036 (0.7)		
352	-0.149 (1.6)	-0.146 (1.8)		
354	-0.107 (0.7)	-0.104 (1.2)		
355	-0.137 (1.4)	-0.134 (1.6)		
356	-0.195 (2.0)	-0.193 (2.2)		
361	-0.001 (0.1)	-0.003 (0.0)		
362	-0.045 (0.5)	-0.041 (0.4)		
369	-0.065 (0.9)	-0.061 (0.7)		
371	-0.182 (2.4)	-0.179 (2.6)		
372	-0.178 (2.3)	-0.174 (2.4)		
381	-0.127 (1.4)	-0.124 (1.7)		
382	-0.102 (1.6)	-0.999 (2.0)		
383	-0.104 (1.1)	-0.101 (1.5)		
384	-0.139 (1.7)	-0.136 (2.0)		
$\bar{R}^2$	0.6047	0.6029	0.2593	0.2712
F-Test	11.755	11.366	8.606	8.410

KOR = Capital-output ratio; IMP = Import penetration.

Table 15  
 Regression Estimates for the Public Sector  
 Dependent Variable: PCM; t-values in parentheses

Independent Variables	Model 1	Model 2	Model 3	Model 4
Intercept	0.178 (1.9)	0.183 (2.0)	0.257 (5.6)	0.281 (5.7)
KOR	-0.008 (1.1)	0.002 (0.3)	-0.020 (2.5)	-0.010 (1.8)
IMP	-0.002 (0.6)	0.002 (0.6)	-0.030 (3.2)	-0.003 (2.1)
KOR.IMP		-0.005 (2.9)		-0.001 (0.8)
<u>Year Dummy Variables</u>				
1977	-0.101 (2.2)	-0.131 (2.8)	-0.102 (1.6)	-0.108 (1.7)
1978	-0.098 (2.0)	-0.132 (2.7)	-0.101 (1.6)	-0.109 (1.7)
1979	-0.143 (2.9)	-0.171 (3.5)	-0.151 (2.3)	-0.157 (2.5)
1980	-0.203 (4.3)	-0.218 (4.6)	-0.207 (3.2)	-0.210 (3.2)
1981	-0.086 (1.7)	-0.109 (2.3)	-0.089 (1.4)	-0.094 (1.5)
1982	-0.027 (0.6)	-0.045 (0.9)	-0.028 (0.4)	-0.032 (0.5)
1983	-0.022 (0.5)	-0.041 (0.9)	-0.024 (0.4)	-0.028 (0.4)
1984	-0.069 (1.4)	-0.083 (1.8)	-0.079 (1.2)	-0.081 (1.2)
1985	-0.055 (1.2)	-0.081 (1.8)	-0.051 (0.8)	-0.056 (10.8)
<u>Industry Dummy Variables</u>				
311	-0.062 (0.7)	-0.055 (0.6)		
313	0.535 (5.5)	0.549 (5.7)		
321	0.018 (0.2)	0.033 (0.3)		
324	-0.087 (0.9)	-0.076 (0.8)		
331	-0.055 (0.6)	-0.043 (0.5)		
332	0.363 (3.8)	0.367 (4.0)		
341	0.003 (0.0)	0.026 (0.3)		
342	0.053 (0.6)	0.065 (0.7)		
351	0.186 (2.1)	0.203 (2.4)		
352	0.011 (0.1)	0.066 (0.8)		
353	0.178 (2.2)	0.173 (2.2)		
354	-0.046 (0.5)	-0.022 (0.2)		
356	0.061 (0.4)	0.094 (0.7)		
361	0.130 (1.4)	0.169 (1.9)		
369	0.091 (1.0)	0.108 (1.2)		
371	0.141 (2.0)	0.263 (2.9)		
372	-0.002 (0.0)	0.205 (2.0)		
381	0.081 (1.1)	0.170 (2.2)		
382	-0.033 (0.3)	-0.108 (1.2)		
383	-0.109 (1.6)	-0.131 (1.9)		
$R^2$	0.5207	0.5402	0.0822	0.0806
F-Test	8.253	8.599	2.686	2.513

KOR = Capital-output ratio; IMP = Import penetration.

TABLE 16

AVERAGE RATE OF GROWTH OF TFP BY INDUSTRY  
 D1=0 FOR 1976-80, D1=1 FOR 1981-85  
 DO=PR FOR PRIVATE FIRMS AND DO=PU FOR PUBLIC FIRMS

OBS	IND	DO	D1	MTFP
52	385	PR	1	0.08762
53	311	PU	0	-0.02506
54	313	PU	0	-0.12258
55	314	PU	0	0.01654
56	321	PU	0	-0.03294
57	322	PU	0	-0.22660
58	324	PU	0	-0.10126
59	331	PU	0	-0.09174
60	332	PU	0	0.04366
61	341	PU	0	-0.10436
62	342	PU	0	-0.09494
63	351	PU	0	-0.01226
64	352	PU	0	-0.04958
65	353	PU	0	-0.18164
66	354	PU	0	-0.17038
67	356	PU	0	-0.13385
68	361	PU	0	-0.12552
69	369	PU	0	-0.05302
70	371	PU	0	-0.04802
71	372	PU	0	0.04200
72	381	PU	0	-0.03336
73	382	PU	0	-0.06714
74	383	PU	0	-0.12758
75	384	PU	0	-0.02806
76	311	PU	1	0.06914
77	313	PU	1	0.20844
78	314	PU	1	0.15168
79	321	PU	1	0.01110
80	322	PU	1	0.20933
81	324	PU	1	-0.07018
82	331	PU	1	0.00114
83	332	PU	1	-0.07670
84	341	PU	1	0.07072
85	342	PU	1	-0.00296
86	351	PU	1	-0.02220
87	352	PU	1	0.02896
88	353	PU	1	0.08560
89	354	PU	1	0.14142
90	356	PU	1	-0.03610
91	361	PU	1	0.12464
92	369	PU	1	0.01042
93	371	PU	1	0.07164
94	372	PU	1	0.06744
95	381	PU	1	0.08758
96	382	PU	1	0.05514
97	383	PU	1	0.11302
98	384	PU	1	0.02094



TABLE 16

AVERAGE RATE OF GROWTH OF TFP BY INDUSTRY  
 D1=0 FOR 1976-80, D1=1 FOR 1981-85  
 DO=PR FOR PRIVATE FIRMS AND DO=PU FOR PUBLIC FIRMS

OBS	IND	DO	D1	MTFP
1	311	PR	0	0.02288
2	313	PR	0	-0.02090
3	314	PR	0	0.04260
4	321	PR	0	0.00356
5	322	PR	0	0.02840
6	323	PR	0	-0.10820
7	324	PR	0	-0.08640
8	331	PR	0	-0.08392
9	332	PR	0	-0.06724
10	341	PR	0	-0.01630
11	342	PR	0	-0.04844
12	351	PR	0	-0.03058
13	352	PR	0	-0.03314
14	354	PR	0	-0.03904
15	355	PR	0	-0.07030
16	356	PR	0	-0.09304
17	361	PR	0	-0.07780
18	362	PR	0	-0.05114
19	369	PR	0	-0.02756
20	371	PR	0	-0.02888
21	372	PR	0	0.00060
22	381	PR	0	-0.06276
23	382	PR	0	-0.04948
24	383	PR	0	-0.05200
25	384	PR	0	-0.05876
26	385	PR	0	-0.06666
27	311	PR	1	-0.00962
28	313	PR	1	-0.07838
29	314	PR	1	0.06996
30	321	PR	1	0.01660
31	322	PR	1	0.02760
32	323	PR	1	0.02320
33	324	PR	1	0.06286
34	331	PR	1	0.00112
35	332	PR	1	0.08280
36	341	PR	1	-0.02928
37	342	PR	1	-0.01424
38	351	PR	1	0.02062
39	352	PR	1	0.07750
40	354	PR	1	-0.00094
41	355	PR	1	0.03008
42	356	PR	1	0.03148
43	361	PR	1	0.06754
44	362	PR	1	0.03882
45	369	PR	1	0.02274
46	371	PR	1	0.09780
47	372	PR	1	0.04498
48	381	PR	1	0.05006
49	382	PR	1	0.06286
50	383	PR	1	0.05594
51	384	PR	1	0.05384

TABLE 17

AVERAGE RATE OF GROWTH OF TFP FOR ALL INDUSTRIES  
 D1=0 FOR 1976-80, D1=1 FOR 1981-85  
 DO=PR FOR PRIVATE FIRMS AND DO=PU FOR PUBLIC FIRMS

VARIABLE	MEAN	MINIMUM VALUE	MAXIMUM VALUE
----- DO=PR D1=0 -----			
MTFP	-0.041	-0.108	0.043
----- DO=PR D1=1 -----			
MTFP	0.034	-0.078	0.098
----- DO=FU D1=0 -----			
MTFP	-0.075	-0.227	0.044
----- DO=PU D1=1 -----			
MTFP	0.057	-0.077	0.209

TABLE 18

CORRELATION COEFFICIENT BETWEEN THE RATES OF  
 GROWTH OF LABOR (GL), CAPITAL STOCK (GK), REAL  
 OUTPUT (GCX), INTERMEDIATE INPUTS (GCI), AND TFP

PEARSON CORRELATION COEFFICIENTS / PROB > |R| UNDER HO:RHO=0 / NUMBER OF OBSERVATIONS

	GL	GK	GCX	GCI	TFP
GL	1.00000 0.0000 585	0.11411 0.0057 585	0.40099 0.0001 487	0.39308 0.0001 484	0.09879 0.0298 484
GK	0.11411 0.0057 585	1.00000 0.0000 588	0.13911 0.0021 487	0.04138 0.3636 484	-0.05818 0.2014 484
GCX	0.40099 0.0001 487	0.13911 0.0021 487	1.00000 0.0000 487	0.74356 0.0001 484	0.67615 0.0001 484
GCI	0.39308 0.0001 484	0.04138 0.3636 484	0.74356 0.0001 484	1.00000 0.0000 484	0.08072 0.0761 484
TFP	0.09879 0.0298 484	-0.05818 0.2014 484	0.67615 0.0001 484	0.08072 0.0761 484	1.00000 0.0000 484

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TABLE 19

AVERAGE RATE OF GROWTH OF OUTPUT, INPUTS, AND TFP  
 D1=0 FOR 1976-78, D1=1 FOR 1979-80, AND D1=2 FOR 1981-85  
 DO=PR FOR PRIVATE FIRMS AND DO=PU FOR PUBLIC FIRMS

VARIABLE	LABEL	MEAN	MINIMUM VALUE	MAXIMUM VALUE
----- DO=PR D1=0 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.054	-0.242	0.192
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.082	-0.006	0.261
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.067	-0.220	0.257
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.044	-0.234	0.184
MTFP	AVERAGE TFP GROWTH RATE	0.017	-0.159	0.182
----- DO=PR D1=1 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.006	-0.074	0.140
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.050	-0.033	0.166
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	-0.153	-0.502	0.107
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	-0.057	-0.359	0.245
MTFP	AVERAGE TFP GROWTH RATE	-0.128	-0.402	-0.014
----- DO=PR D1=2 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.051	0.002	0.215
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.044	-0.137	0.149
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.140	0.010	0.280
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.129	-0.008	0.294
MTFP	AVERAGE TFP GROWTH RATE	0.034	-0.078	0.098
----- DO=PU D1=0 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.049	-0.015	0.237
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.077	-0.040	1.007
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.007	-0.762	0.552
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	-0.039	-0.861	0.382
MTFP	AVERAGE TFP GROWTH RATE	-0.005	-0.198	0.230
----- DO=PU D1=1 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.004	-0.131	0.180
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.002	-0.046	0.086
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	-0.115	-0.633	0.558
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.073	-0.569	0.607
MTFP	AVERAGE TFP GROWTH RATE	-0.181	-0.911	0.378
----- DO=PU D1=2 -----				
MGL	AVERAGE LABOR GROWTH RATE	-0.007	-0.322	0.144
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.021	-0.043	0.396
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.083	-0.258	0.367
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.025	-0.296	0.190
MTFP	AVERAGE TFP GROWTH RATE	0.057	-0.077	0.209

TABLE 20

AVERAGE RATE OF GROWTH OF OUTPUT, INPUTS, AND TFP  
IN EXPORTABLE INDUSTRIES  
D1=0 FOR 1976-78, D1=1 FOR 1979-80, AND D1=2 FOR 1981-85  
DO=PR FOR PRIVATE FIRMS AND DO=PU FOR PUBLIC FIRMS

VARIABLE	LABEL	MEAN	MINIMUM VALUE	MAXIMUM VALUE
----- DO=PR D1=0 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.059	0.017	0.142
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.056	-0.002	0.168
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.073	-0.007	0.169
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.065	-0.012	0.134
MTFP	AVERGE TFP GROWTH RATE	0.010	-0.095	0.083
----- DO=PR D1=1 -----				
MGL	AVERAGE LABOR GROWTH RATE	-0.014	-0.074	0.068
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.051	-0.008	0.166
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	-0.171	-0.502	-0.001
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	-0.112	-0.359	0.003
MTFP	AVERGE TFP GROWTH RATE	-0.109	-0.291	-0.014
----- DO=PR D1=2 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.075	0.006	0.215
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.036	0.010	0.096
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.192	0.079	0.280
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.180	0.098	0.294
MTFP	AVERGE TFP GROWTH RATE	0.050	0.001	0.098
----- DO=PU D1=0 -----				
MGL	AVERAGE LABOR GROWTH RATE	-0.068	-0.464	0.114
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.039	-0.044	0.119
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	-0.142	-0.762	0.079
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	-0.231	-0.861	0.219
MTFP	AVERGE TFP GROWTH RATE	-0.017	-0.180	0.230
----- DO=PU D1=1 -----				
MGL	AVERAGE LABOR GROWTH RATE	-0.012	-0.097	0.064
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.008	-0.046	0.086
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	-0.017	-0.416	0.558
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.231	-0.172	0.607
MTFP	AVERGE TFP GROWTH RATE	-0.152	-0.911	0.378
----- DO=PU D1=2 -----				
MGL	AVERAGE LABOR GROWTH RATE	-0.062	-0.322	0.027
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.000	-0.033	0.050
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.027	-0.258	0.154
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	-0.054	-0.296	0.108
MTFP	AVERGE TFP GROWTH RATE	0.043	-0.077	0.209

TABLE 21

AVERAGE RATE OF GROWTH OF OUTPUT, INPUTS, AND TFP  
 IN IMPORTABLE INDUSTRIES  
 D1=0 FOR 1976-78, D1=1 FOR 1979-80, AND D1=2 FOR 1981-85  
 DO=PR FOR PRIVATE FIRMS AND DO=PU FOR PUBLIC FIRMS

VARIABLE	LABEL	MEAN	MINIMUM VALUE	MAXIMUM VALUE
----- DO=PR D1=0 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.057	0.029	0.076
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.133	0.080	0.246
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.109	0.013	0.257
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	-0.002	-0.069	0.067
MTFP	AVERAGE TFP GROWTH RATE	0.074	-0.005	0.182
----- DO=PR D1=1 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.029	-0.028	0.140
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.073	0.040	0.110
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	-0.200	-0.494	0.107
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	-0.006	-0.157	0.245
MTFP	AVERAGE TFP GROWTH RATE	-0.207	-0.402	-0.025
----- DO=PR D1=2 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.040	0.005	0.066
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.092	0.045	0.149
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.155	0.109	0.206
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.124	0.064	0.190
MTFP	AVERAGE TFP GROWTH RATE	0.048	0.021	0.063
----- DO=PU D1=0 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.034	-0.019	0.074
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.039	0.001	0.107
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.115	-0.028	0.277
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.018	-0.121	0.186
MTFP	AVERAGE TFP GROWTH RATE	0.082	-0.108	0.220
----- DO=PU D1=1 -----				
MGL	AVERAGE LABOR GROWTH RATE	-0.025	-0.131	0.031
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.011	-0.028	0.072
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	-0.235	-0.432	0.068
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	-0.000	-0.374	0.215
MTFP	AVERAGE TFP GROWTH RATE	-0.219	-0.603	0.021
----- DO=PU D1=2 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.047	-0.034	0.144
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.097	-0.025	0.396
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.154	0.007	0.367
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.111	0.002	0.190
MTFP	AVERAGE TFP GROWTH RATE	0.047	-0.022	0.113

TABLE 22

AVERAGE RATE OF GROWTH OF OUTPUT, INPUTS, AND TFP  
 IN NON-TRADABLE INDUSTRIES  
 D1=0 FOR 1976-78, D1=1 FOR 1979-80, AND D1=2 FOR 1981-85  
 DO=PR FOR PRIVATE FIRMS AND DO=PU FOR PUBLIC FIRMS

VARIABLE	LABEL	MEAN	MINIMUM VALUE	MAXIMUM VALUE
----- DO=PR D1=0 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.017	-0.253	0.091
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.078	-0.023	0.157
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.052	-0.220	0.172
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.053	-0.234	0.184
MTFP	AVERAGE TFP GROWTH RATE	0.002	-0.159	0.102
----- DO=PR D1=1 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.006	-0.051	0.078
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.039	-0.033	0.125
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	-0.125	-0.325	0.032
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	-0.044	-0.167	0.098
MTFP	AVERAGE TFP GROWTH RATE	-0.110	-0.251	-0.017
----- DO=PR D1=2 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.044	0.002	0.106
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.032	-0.137	0.126
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.107	0.010	0.228
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.105	-0.008	0.242
MTFP	AVERAGE TFP GROWTH RATE	0.019	-0.078	0.077
----- DO=PU D1=0 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.064	-0.035	0.336
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.168	-0.033	1.650
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	-0.021	-0.197	0.112
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	-0.019	-0.701	0.243
MTFP	AVERAGE TFP GROWTH RATE	-0.052	-0.198	0.080
----- DO=PU D1=1 -----				
MGL	AVERAGE LABOR GROWTH RATE	0.028	-0.125	0.180
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	-0.002	-0.043	0.078
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	-0.062	-0.450	0.506
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.090	-0.182	0.589
MTFP	AVERAGE TFP GROWTH RATE	-0.163	-0.395	-0.008
----- DO=PU D1=2 -----				
MGL	AVERAGE LABOR GROWTH RATE	-0.009	-0.108	0.068
MGK	AVERAGE GROWTH RATE OF CAPITAL STOCK	0.003	-0.043	0.087
MGCX	AVERAGE RATE OF GROWTH OF OUTPUT	0.070	-0.095	0.228
MGCI	AVERAGE GROWTH RATE OF INTER INPUTS	0.011	-0.079	0.127
MTFP	AVERAGE TFP GROWTH RATE	0.065	-0.070	0.208

**Table 23**  
**Regression Estimates for the Public Sector**  
**Dependent Variable: TFP; t-values in parentheses**

<u>Independent Variables</u>	<u>Model 1</u>	<u>Model 2</u>
Intercept	-0.082 (1.4)	-0.098 (2.5)
GOUT	0.379 (10.3)	0.371 (10.7)
GIMP	-0.019 (1.0)	-0.024 (1.3)
 <u>Year Dummy Variables</u>		
1978	0.099 (1.7)	0.096 (1.7)
1979	0.000 (0.0)	-0.000 (0.0)
1980	-0.028 (0.5)	-0.028 (0.5)
1981	0.231 (4.0)	0.233 (4.2)
1982	0.130 (2.3)	0.130 (2.3)
1983	0.079 (1.4)	0.079 (1.5)
1984	0.046 (0.8)	0.042 (0.8)
1985	0.105 (1.8)	0.099 (1.8)
 <u>Industry Dummy Variables</u>		
311	0.013 (0.1)	
313	0.017 (0.2)	
321	-0.007 (0.1)	
324	-0.070 (0.8)	
331	-0.037 (0.4)	
332	0.097 (1.0)	
341	-0.021 (0.2)	
342	-0.047 (0.5)	
351	-0.041 (0.5)	
352	-0.008 (0.1)	
353	-0.068 (0.8)	
354	-0.015 (0.2)	
356	-0.026 (0.3)	
361	-0.000 (0.0)	
369	-0.026 (0.3)	
371	-0.019 (0.2)	
372	0.014 (0.2)	
381	-0.031 (0.3)	
382	-0.007 (0.1)	
383	-0.053 (0.6)	
 $R^2$	 0.5559	 0.5121
F-test	6.468	20.419

GOUT = Rate of growth of real output;

GIMP = Rate of growth of import penetration.

**Table 24**  
**Regression Estimates for the Private Sector**  
**Dependent Variable: TFP; t-values in parentheses**

Dependent Variable	Model 1	Model 2
Intercept	0.008 (0.2)	-0.012 (0.6)
GOUT	0.557 (14.7)	0.553 (15.3)
GIMP	0.026 (2.7)	0.026 (2.8)
<u>Year Dummy Variables</u>		
1978	-0.014 (.5)	-0.014 (0.5)
1979	-0.07 (2.3)	-0.072 (2.4)
1980	-0.05 (0.2)	-0.005 (0.2)
1981	-0.017 (0.6)	-0.016 (0.5)
1982	-0.026 (0.9)	-0.026 (0.9)
1983	-0.055 (1.8)	-0.055 (1.9)
1984	-0.016 (0.5)	-0.016 (0.5)
1985	-0.043 (1.5)	-0.043 (1.5)
<u>Industry Dummy Variables</u>		
311	-0.021 (0.5)	
313	-0.050 (1.0)	
321	-0.007 (0.1)	
323	-0.049 (1.0)	
324	-0.019 (0.4)	
331	-0.036 (0.7)	
332	-0.031 (0.6)	
341	-0.061 (1.2)	
342	-0.028 (0.6)	
351	-0.036 (0.8)	
352	0.020 (0.4)	
354	-0.086 (1.8)	
355	-0.003 (0.1)	
356	0.007 (0.1)	
361	-0.027 (0.6)	
362	-0.032 (0.7)	
369	-0.011 (0.2)	
371	0.010 (0.2)	
372	0.001 (0.0)	
381	-0.003 (0.1)	
382	-0.009 (0.2)	
383	-0.025 (0.5)	
384	0.000 (0.0)	
$R^2$	0.6770	0.6394
F-test	11.560	39.120

GOUT = Rate of growth of real output;

GIMP = Rate of growth of import penetration.



Table 25

Regression Estimates for the Private Sector  
(t-values in brackets)

1.  $TFP = a_0 + a_1X1 + a_2X2 + a_3X3 + \text{Time dummies} + \text{Industry dummies} + u$

2.  $TFP = \beta_0 + \beta_1X1 + \beta_2X2 + \beta_3X3 + \beta_4\hat{m} + \text{Time dummies} + \text{Industry dummies} + u$

Independent Variables	Model 1	Model 2
Intercept	-.03 (.6)	-.02 (.5)
X1	.47(10.5)	.49 (11.0)
X2	-.44 (5.8)	-.46 (6.2)
X3	.47 (3.5)	.45 (3.4)
$\hat{m}$		.03 (2.8)
F-Test for $a_1 = -a_2$	.19	.15
F-Test for $a_1 = a_3$	.0	.07
$\bar{R}^2$	.494	.513
F-Test	7.17	7.47
Number of observations	215	215

X1 = Growth in output attributed to growth in domestic demand.

X2 = Growth in output attributed to growth in import penetration.

X3 = Growth in output attributed to export demand.

$\hat{m}$  = Growth in import penetration.

Table 26  
Regression Estimates for the Public Sector  
(t-values in brackets)

1.  $TFP = a_0 + a_1X1 + a_2X2 + a_3X3 + \text{Time dummies} + \text{Industry dummies} + u$

2.  $TFP = \beta_0 + \beta_1X1 + \beta_2X2 + \beta_3X3 + \beta_4\hat{m} + \text{Time dummies} + \text{Industry dummies} + u$

Independent Variables	Model 1		Model 2	
Intercept	-.10	(1.1)	-.10	(1.2)
X1	.49	(4.9)	.47	(4.7)
X2	-.59	(1.8)	-.44	(1.3)
X3	.09	(.2)	-.06	(.15)
$\hat{m}$			-.03	(1.5)
F-test for $a_1 = -a_2$	.09		.01	
F-test for $a_1 = a_3$	2.0		1.6	
$\bar{R}^2$	.211		.217	
F-Test	2.59		2.60	
Number of observations	185		185	

X1 = Growth in output attributed to growth in domestic demand.  
X2 = Growth in output attributed to growth in import penetration.  
X3 = Growth in output attributed to export demand.  
 $\hat{m}$  = Growth in import penetration.

TABLE 27  
AVERAGE LABOR PRODUCTIVITY IN THE PUBLIC SECTOR

OBS	YEAR	TLPU	TCXPU	LPPU
1	1975	246868	806263171	3265.97
2	1976	259128	839421594	3239.41
3	1977	286591	953290667	3326.31
4	1978	288009	815432078	2831.27
5	1979	292560	657611067	2247.78
6	1980	288481	698769801	2422.24
7	1981	271335	1040691031	3835.45
8	1982	265737	1189383623	4475.79
9	1983	278421	1145813425	4115.40
10	1984	278685	1188203087	4263.61
11	1985	275539	1235489774	4483.90

TABLE 28  
AVERAGE LABOR PRODUCTIVITY IN THE PRIVATE SECTOR

OBS	YEAR	TLPR	TCXPR	LPPR
1	1975	455505	1349899510	2963.52
2	1976	474455	1460184619	3077.60
3	1977	469448	1565849858	3335.51
4	1978	516504	1729528029	3348.53
5	1979	503203	1417109671	2816.18
6	1980	516157	1264006543	2448.88
7	1981	534305	1605024269	3003.95
8	1982	567044	1814106721	3199.23
9	1983	584967	1956178301	3344.08
10	1984	611838	2203699824	3601.77
11	1985	632081	2439497483	3859.47

TLPU-TOTAL NUMBER OF EMPLOYEES IN THE PUBLIC SECTOR  
TCXPU-TOTAL VALUE OF REAL OUTPUT IN THE PUB SECTOR 1000TL  
LPPU-AVERAGE OUTPUT PER EMPLOYEE IN THE PUB SECTOR 1000TL

TLPR-TOTAL NUMBER OF EMPLOYEES IN THE PRIVATE SECTOR  
TCXPR-TOTAL VALUE OF REAL OUTPUT IN THE PRIV SECTOR 1000TL  
LPPR-AVERAGE OUTPUT PER EMPLOYEE IN THE PRIV SECTOR 1000TL

## Bibliography

- Baysan, Tercan and Charles Blitzer (1985): "The Timing and Sequencing of Trade Liberalization: The Case of Turkey"; World Bank.
- Bhagwati, J. (1988): "Export Promoting Trade Strategy: Issues and Evidence"; The World Bank Research Observer.
- Bresnahan, T. (1989): "Empirical Studies of Industries with market Power"; Chapter 17 in R. Schmalemsee and R. Willig (ed) Handbook of Industrial Organization, North Holland.
- Caves, Richard (1985): "International Trade and Industrial Organization; Problems solved and unsolved"; European Economic Review 28, 377-395.
- Corbo, Vittorio, Jaime de Melo and James Tybout (1988): "The Effect of Trade Policy on Scale and Technical Efficiency: New Evidence From Chile"; World Bank, May.
- Derr, W. (1979): "Multi-Intermediate Goods Trade: The Gains and the Heckscher-Ohlin Analysis", American Economic Review, 69, 4 (September), 575-86.
- Edwards, Sebastian (1989): "Openness, Outward Orientation, Trade Liberalization and Economic Performance in Developing Countries"; PPR working Paper no. 191, World Bank, June.
- Foroutan, Faezeh (1987): "Trade Policy in Turkey in 1986 and 1987: An Evaluation"; World Bank.
- (1990): "Productivity and Market Power: An Application to Private Manufacturing Industry in Turkey"; Forthcoming.
- Havrylyshyn, Oleh (1989): "The Efficiency Gains of Trade Liberalization: Review of Evidence"; forthcoming in World Bank Research Observer.
- Kruger, A. and B. Tuncer (1980): "Estimating Total Factor Productivity Growth in a Developing Country" World Bank Staff Working Paper No. 422; Washington, D.C.
- Krugman, Paul (1986): "Industrial Organization and International Trade"; NBER Working Paper 1957, Cambridge, Mass.
- Michaeli, M., A. Choksi, and D. Papageorgiou (Forthcoming): Liberalizing Foreign Trade: Lessons of Experience in the Developing World; The World Bank.
- Milanovic, B. (1986): "Export Incentives and Turkish Manufacturing Exports, 1980-84"; World Bank Staff Working Paper no. 768.

Nishimizu, Mieko and Sherman Robinson (1984): "Trade Policies and Productivity Change in Semi-Industrialized Countries"; Journal of Development Economics 16, 177-206.

Nishimizu, Mieko and John Page (1987): "Economic Policies and Productivity Change in Industry: An International Comparison"; World Bank.

Roberts, Mark (1989): "The Structure of Production in Colombian Manufacturing Industries 1977-1985"; World Bank, CECTP.

Rodrik, Dani (1988): "Closing the Technology Gap: Does Trade Liberalization Really Help?"; World Bank.

Romer, Paul (1989): "What Determines the Rate of Growth and Technological Change?"; PPR working paper 279, World Bank.

Schmalensee, R. (1989): "Inter-Industry Studies of Structure and Performance"; Chapter 16 in R. Schmalensee and R. Willig (ed) Handbook of Industrial Organization, North Holland.

----- (1985): "Do Markets Differ Much?", American Economic Review, 75: 341-51.

Shapiro, Matthew D. (1987): Measuring Market Power; NBER Working Paper 2212.

Tybout, James (1987): "Industrial Competition, Productive Efficiency, and Their Relation to Trade Regime"; World Bank, CECTP, December.

----- (1989): "Entry, Exit, Competition and Productivity in the Chilean Industrial Sector"; World Bank, CECTP.

World Bank (1984): Turkey: Trade Policy Issues in the Structural Adjustment; Report 5365, August.

World Bank (1988): Evaluation of structural Adjustment Lending in Turkey: Program Performance Audit Report of the Forth and Fifth Structural Adjustment Loans; Report No. 7205, April.

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