

Intersectoral linkages and their implications for employment creation in Turkey: A comparative Input - Output Analysis for 1979, 1985 and 1990*

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Abstract

The purpose of this paper is to analyze the employment effects of industrialization for Turkey. To this purpose, the input-output tables for the years 1979, 1985, and 1990 are analyzed. It is found that in each year all sectors have high dependency ratios on manufacturing sector. This provides proof of the existence of a fairly well-developed manufacturing sector in all the examined years. Another result is that the post-1980 export-oriented policies have not been sufficiently successful in shifting the structure of employment from manufacturing to services. The examination of sectoral output multipliers suggest that the transition from an inward-looking strategy to an outward-looking one has increased intersectoral linkages and the employment creating effects of industrialization. While the first few years of the outward-oriented period witnessed an increase in the linkages between sectors, there has been an important decline in later years.

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1. Introduction

For less developed countries LDCs, industrialization and unemployment are problems of crucial importance. Industrialization is defined as the shift of the weight of economic activities to the industrial sector. Industrialization is one of the most important targets for the majority of the LDCs since it is seen as an indispensable condition for being a member of the developed world.

On the other hand, unemployment is one of the most important socio-economic problems in LDCs. In most LDCs, it is thought that when the development *via* industrialization is achieved, employment will increase as a consequence of rapid industrialization. The industrialization strategies adopted by the LDCs are generally studied under two headings: Import-substituting industrialization (ISI) and export-oriented industrialization (EOI). Turkey has adopted an inward-oriented industrialization strategy based on import substitution between the years 1960-80 through a complex system of tariffs, quotas and subsidies supporting domestic industry and a significant public sector involvement in manufacturing. The impacts of these policies can be seen in Turkey's high growth rates, particularly within the industrial and manufacturing sectors. Between the years 1963-67, the GDP growth rate was 6.4%, while it was 6.7% for the period 1968-72 and 7.2% during 1973-77. The growth rates in the manufacturing industry during the same periods were 11.5%, 9.4% and 9.0%, respectively (Doğruel *et al.*, 1990 :45, 47). A sectoral shift from agriculture to the industrial and service sectors, especially manufacturing, accompanied rapid GDP growth.

With respect to the employment effects of this period, many studies suggest that certain aspects of ISI may be held responsible for the slow pace of employment creation. While the price of labor was kept artificially high, capital was made available to the manufacturing sector at more favorable terms through a series of policies ranging from the maintenance of overvalued exchange rates and low interest rates to a variety of tax, credit and other fiscal and monetary incentives. Another important factor in the same direction was the decisive steps taken for extending the process of import substitution into intermediate and capital goods with relatively higher capital intensity (Şenses, 1990: 7-9)

In January 1980, Turkey adopted a stabilization and structural adjustment policy package. The most important elements of this stabilization and structural adjustment policies cited in Çağatay (1990: 125) are given below:

- Imports were liberalized by gradually lifting restrictions and reducing tariffs, and exports were encouraged by a variety of subsidies, tax rebates and export credits.
- An incomes policy was adopted to reduce demand. While at the same time the internal terms of trade were altered in favor of industry and against agriculture.
- The TL was devalued and a crawling peg was adopted with a view toward the eventual liberalization of foreign exchange operations.
- One of the most important aims of the post-1980 policies was financial liberalization, one of its manifestations being that real interest rates would be made positive. Financial liberalization was believed to increase the domestic savings and thus investments. In 1984, citizens were allowed to hold foreign assets, bank loan rates were freed, and forward transactions in foreign exchange were allowed in a limited fashion. The Central Bank started to implement open market operations in 1987. In August 1989, several major steps were taken toward full financial liberalization. Turkish nationals were permitted to purchase foreign securities abroad and foreigners were permitted to buy Turkish securities, Turkish banks could extend foreign currency credit to foreign trade companies, Turkish nationals were no longer required to obtain government permission to borrow abroad, and foreigners were allowed to open TL accounts convertible into foreign exchange.

With regards to its employment creation effects, many studies state that an EOI strategy did not lead to significant employment increases, especially in the manufacturing sector (Şenses, 1990: 22 and Kırım & Şenses, 1991: 138-41). In Şenses (1990), it is stated that the weak association between export-oriented policies and employment creation in the manufacturing sector are the result of a volatile labor environment as well as political life at large, together with frequent and major changes in economic policies during this period that caused widespread uncertainty. The low supply elasticity of capital, especially in export activities, is seen as another factor responsible for the weak employment response to the EOI trade policy.

The purpose of this paper is to analyze the employment effects of industrialization for Turkey. The important questions to be answered are: How is the structure of employment affected by the industrialization process? Can rapid industrialization be consistent with the objective of maximizing employment creation in the long run? To this purpose, the interindustry linkages are studied *via* an input-output analysis. The pattern and measurement of the interdependencies among sectors or linkages, indicates a given sector's capacity to stimulate other sectors. The key sectors are those that have the greatest number of linkages.

Because of these interdependencies and the multiplier effects, a strategy of development based on investment in the key sectors is expected to promote generalized economic development.

Section 2 focuses on the linkages between the manufacturing sector and the service sector using the 1979, 1985 and 1990 input-output tables for Turkey. Section 3 consists of a conclusion and policy implications.

2. Linkages between sectors

In the literature, technologies are generally separated into two categories: Labor-intensive techniques (techniques of production giving rise to relatively more use of labor force), and capital-intensive techniques (techniques of production giving rise to relatively more intensive use of capital goods). For an overpopulated developing country which suffers from having relatively small internal markets, high protectionism and a lack of skilled and qualified manpower, the rational solution is often said to be the adoption of labor-intensive production methods to generate more employment or to avoid rising unemployment. It is generally thought that capital-intensive techniques of production are generally labor-saving and they create an employment problem. So, it is clear that there is a conflict between output and employment. A capital-intensive technique that uses a greater number of automatic machines generates more output but less employment. Today this seems to be an important problem also for developed countries.

But this conflict is between current output and current employment. In particular, situations may arise in which more production and less employment now leads to more employment later. This may be possible if less labor-intensive techniques of production yield higher aggregate savings and investment, or are associated with more rapid technical progress than that associated with the use of more labor-intensive techniques (Morawetz, 1974: 537-40). In a similar vein, the increase in production in a certain sector due to rapid industrialization and technological change may lead to decreases in employment in that particular sector but increase employment in other sectors, if the sectors have strong linkages.

This paper examines these linkages *via* an input-output analysis. The input-output tables for Turkey that are used in this study are those for the years 1979, 1985 and 1990. These are tables composed of 64 sectors of the economy. The 1979 input-output table is useful because it permits the analysis of the situation just before

1980, the period in which ISI strategy was in effect. Meanwhile it should be kept in mind that 1979 was a crisis year characterized by balance of payments difficulties and high rates of inflation. The 1985 table demonstrates the first consequences of the stabilization and structural adjustment program that began in 1980. The 1990 table demonstrates more clearly the long-run effects of the post-1980 adjustment policies since some elements of the structural adjustment program are put in practice later than others. The analysis of these three tables permit us to make a comparative study in two directions. First, it is possible to make a comparison between the two periods in which different industrialization policies were implemented. Second, it is possible to make a comparison between two distinct years of a period in which the same industrialization strategy was at work.

The next section consists of this comparative study. Specifically the interindustry transactions between manufacturing and services, the income-induced demand for services, and the industry multiplier effects will be analyzed.

2.1. Interindustry transactions between manufacturing and services

The labor absorption in the service sector of the developing countries has been examined by two opposing schools of thought. Park (1987: 364), designate them as "supply-determined employment" and "demand-derived employment".

The supply-determinist school maintains that the absorption of labor in the service sector is due to the excess supply of labor in most developing countries. Various possible causes have been proposed for supply increases, including increases in the rate of population growth, changes in the patterns of landholding in rural areas, and the appearance of a small, non-competitive, high wage subsector of the urban labor market. At times, these supply-oriented explanations have been supplemented by demand-slowng effects, such as labor-saving technological change or stagnation of import capacity, which provide additional explanations for the emergence of an excess supply of labor (Udall, 1976: 780). This excess supply of labor is generally accumulated in big cities as a result of the continuing rural-urban migration. The manufacturing sector is therefore not capable of absorbing a substantial portion of this rapidly growing urban workforce. Those who are not employed in the manufacturing sector seek employment in small-scale urban activities such as petty commerce and miscellaneous services, where skill requirements are low and entry is easy. In this way, the supply determinism school views the service sector as a residual employer, disguising the underemployment of

those not absorbed by the manufacturing sector in developing countries.

By contrast, the “demand-derived employment” school attaches more importance to the expansion in the demand for services, and the consequent employment creation in the service sector is believed to be the result of two main factors. First, as industrialization proceeds, the growth of the manufacturing sector causes increased demand for service inputs into manufacturing such as transport and communications, commerce, banking and finance, professional services, and government services. Secondly, as industrialization proceeds per-capita incomes rise and rising incomes create a demand for a whole range of consumer services. Service activities such as education, health, tourism, entertainment and leisure time activities are high-income consumption items and thus have positive income elasticities of demand. So, it is obvious that rising per-capita incomes raise the demand for service activities whose income elasticities of demand are positive and, in this way, led to the rapid expansion of service employment (Udall, 1976: 783-4). Undoubtedly, the proportion of demand-derived service employment will increase, while that of supply-determined service employment will decline in the process of economic development.

Tables 1-3 provide a comparison of the sectoral dependency ratios between manufacturing and services in the years 1979, 1985 and 1990. In these tables the sectors are decomposed into agriculture, mining, manufacturing, construction and services.

The sectoral dependency ratio measures the sector’s purchase of an input as a percentage of its total intermediate input purchases. The dependency ratio of sector j on sector i can be expressed as:

$$d_{ij} = X_{ij} / \sum_{i=1}^n X_{ij} \quad (1)$$

The results demonstrate the nature and extent of the service-manufacturing linkages in several ways. First the empirical results support the idea that the output of the manufacturing sector is an important input into service sector activities. The dependency ratios of service sector activities on manufactured inputs are rather high. When we compare the years 1979 and 1985 we see that the dependency of the service sector on manufacturing rises from 59% to 61%. In 1990, this ratio decreases to 47% (Tables 1, 2 and 3). These numbers show that, despite the decrease in 1990, the expansion of output and employment in the service sector is

highly supported by the manufacturing sector. The decline in 1990 may be the sign of a loss of strength in the manufacturing sector. The dependency ratio of the construction sector on manufacturing is found to be significantly high in all three years. The 61% ratio in 1979 increased to 76% in 1985, and fell to 69% in 1990 (Tables 1, 2 and 3). These findings suggest that in the outward-oriented development period the service sector needed more manufactured inputs in comparison with the period of import-substitution, but the high ratios in the import-substitution period can also be attributed to the existence of a well-developed manufacturing sector.

A second observation is that the patterns of input purchases between the manufacturing sector and the service sector appear to be asymmetrical.

Table 1
Sectoral Dependency Ratios, 1979 (%)

	01	02	03	04	05
01 Agriculture	44	3	23	0.2	1
02 Mining	0	2	6	3	0.5
03 Manufacturing	32	60	48	61	59
04 Construction	0	0	0	0	0
05 Services	24	40	23	36	39

Source: SIS, 1979 (calculated from the 1979 Input-Output table for Turkey)

Table 2
Sectoral Dependency Ratios, 1985 (%)

	01	02	03	04	05
01 Agriculture	38	9	15	0	2
02 Mining	0	1	15	5	0
03 Manufacturing	42	64	51	76	61
04 Construction	0	0	0	0	0
05 Services	20	26	19	19	38

Source: SIS, 1985 (calculated from the 1985 Input-Output table for Turkey)

Table 3
Sectoral Dependency Ratios, 1990 (%)

	01	02	03	04	05
01 Agriculture	48	3	14	0	4
02 Mining	0	1	9	4	1
03 Manufacturing	28	61	56	69	47
04 Construction	0	0	0	0	0
05 Services	24	35	21	27	48

Source: DIE, 1990 (calculated from the 1990 Input-Output table for Turkey)

In contrast to the fact that manufacturing sector inputs dominate the total intermediate input purchases of the service sector, the manufacturing sector generally purchases a relatively small percentage of its total inputs from the service industries. The dependency ratio of manufacturing on services is found to be 23% in 1979, 19% in 1985, and 21% in 1990. When these ratios are decomposed into trade and transport on the one hand and other services on the other, it is found that the dependency ratio of manufacturing on trade and transport was 19%, while the dependency ratio of manufacturing on other services was 4% in 1979. In 1985, the dependency ratio of manufacturing on trade and transport decreased to 14%, while the dependency ratio of manufacturing on other services increased to 5%. These findings are in accordance with a similar study by Park (1989: 365), who has found that when a country reaches the advanced stages of industrialization the dependency ratio of manufacturing on trade and transport decreases, while the ratio of manufacturing on other services increases. However, we see that in 1990 the dependency ratio of manufacturing on trade and transport increased to 16% while the dependency ratio on other services is 6%. The fact that the dependency ratio of manufacturing on trade and transport increased in 1990, while its dependency ratio on other services remained more or less stable, indicates that 1990 was not a year of success for industrialization purposes.

This small share of services into manufacturing may prove to be an important fraction of total intermediate input sales of the individual service industry in question and hence essential for sustaining its output and employment. For example the 23% ratio of trade and transport and services into manufacturing represents 50% of the total intermediate input sales of the total services sector. Similarly the 19% ratio in 1985 represents 52% of the service sector total intermediate input sales, while in 1990 the 21% ratio represents only 39% of the service sector total

intermediate input sales. This means that in 1990 the total intermediate input sales of the service sector to the manufacturing sector has decreased.

Third, the intraindustry transactions within the service sector are equally important as manufactured inputs for the growth of the service sector at large. The intraindustry transactions in the service sector show high ratios in each year. The dependency ratio of the services sector on itself is found to be 39% in 1979, 38% in 1985 and 48% in 1990. These high ratios show that many of the service sector activities complement each other in meeting the intermediate demand for differentiated producer services. The more or less unchanged ratios in 1979 and 1985 indicate that service sector activities did not grow significantly in the initial period of EOI strategy, although important steps have been taken by 1990.

Fourth, the intraindustry dependency ratios within the manufacturing on itself is found to be 48% in 1979, 51% in 1985 and 56% in 1990. These high ratios again are the demonstration of the high industrial maturity existing in those years in Turkey, and reflect in particular the industrial maturity attained in the ISI period. As suggested by Park (1989: 367), the development of linkages within the manufacturing sector is essential for its growth, which in turn increases the sector's demand for service inputs and creates employment in the service sector, while increasing its own labor-absorptive capacity.

Fifth, the dependency ratios of agriculture and mining on manufactured inputs are also found to be high. The dependency ratio of agriculture on manufacturing is found to be 32% in 1979, 42% in 1985, decreasing to 28% in 1990. The dependency ratio of mining on manufactured inputs is found to be 60% in 1979, 64% in 1985 and 61% in 1990. Although these high ratios are the proof of the existence of a fairly well-developed manufacturing sector, the significant decline in the year 1990 show that the dependency of almost all sectors on manufacturing decreased.

2.2. Income-induced demand for services

The second major factor that makes the services sector grow faster than industry as industrialization proceeds, is the concept of increasing incomes creating a demand for the whole range of consumer services. Kuznets (1966: 150-2) has suggested a secular tendency for the share of service employment in the labor force to expand with economic development. He attributed this trend to the slow growth of technical progress in services, a high income elasticity of demand for some

tertiary activities, growing urbanization which increases the demand for services like transport and distribution and other factors. In addition, Galenson (1963: 380) has attempted to test the hypothesis that increases in manufacturing activity lead to increases in tertiary employment. He attributed this relationship to the effect of higher incomes on demand for services and to the increased demand for service inputs into manufacturing. In the “income-induced demand” concept, the examination of income elasticities of demand is important especially for the employment creation strategy. As Park (1989: 368) suggests, if income elasticities for most services are sufficiently high, the development strategy could concentrate on first maximizing economic growth through rapid industrial development. Then, apart from the growing intermediate demand for specialized producer services, rising per capita incomes should increase the demand for personal and social services, thus leading to the rapid expansion of service employment. If income elasticities for services are high, it is expected that the relative share of services overtakes that of manufactured goods as the greater proportion of income is allocated to highly specialized service activities.

The income-induced demand for services can be quantified by calculating the sectoral contributions to gross domestic consumption as measured by the ratio of consumer goods in different industries to total private consumption. If we define:

$$\sum_{j=1}^n X_{ij} = X_{ip},$$

where p denotes the private sector, the sector i^{th} contribution to gross domestic consumption can be expressed as:

$$X_{ip} / \sum_{i=1}^n X_{ip} \quad (2)$$

Table 4 provides a comparison of the sectoral contributions to gross domestic consumption for the years 1979, 1985 and 1990.

The results are interesting. In 1979, the share of the manufacturing sector was the largest, at 40%, while that of trade, transport and services was 34%. In 1985, the share of manufacturing remained more or less the same while that of trade, transport and services increased to 40%.

So, in 1985, the share of manufacturing and services in total private consumption was about the same. It is expected after this point the share of services

to overtake the share of manufacturing. In 1990, as expected, the share of manufacturing decreased to 37%, while the share of trade, transport and services increased to 42%. When the services sector is decomposed in trade and transport on the one hand, and services on the other, it is seen that the share of trade and transport in 1985 has increased to 29% from 25% in 1979 and that the share of services has increased to 11% in 1985 from 10% in 1979.

These results show that the sector which is labeled as "other services" and which has positive income elasticity of demand, taken apart from the trade and transport sector with negative income elasticity of demand, is not sufficiently developed. The results for the 1990 table are worse. In this year the service sector which is associated with positive income elasticity of demand decreased to 9% of the gross domestic consumption which is the lowest ratio compared with 1985 and 1979, while the trade and transport sector which is associated with negative income elasticity of demand increased to 32%. This also demonstrates that 1990 was not a successful year in terms of development.

Table 4
Sectoral Contributions to Gross Domestic Consumption (%)

	1979	1985	1990
01 Agriculture	25	19	20
02 Mining
03 Manufacturing	40	40	37
04 Construction	0	0	0
05 Services	34	40	42

Source: SIS, 1979; 1985; and 1990.

(Calculated from the 1979, 1985, and 1990 Input-Output Tables for Turkey)

Another important observation is that the share of agriculture in total private consumption has decreased from 25% in 1979 to 19% in 1985 while increasing to 20% in 1990.

2.3. Industry multiplier effects

Table 5 gives the unemployment rates in Turkey in 1979, 1985 and 1990. The unemployment rate of 8.9% in 1979 decreased by 18% in 1985, and increased by 12% in 1990.

Table 5
Unemployment ratios (%)

	1979	1985	1990
	8.9	7.3	8.2

Source: SIS, 1992

Table 6 gives the sectoral distribution of the employment in the years under consideration. A shift from agriculture to manufacturing and services has occurred over these years. Even if the employment ratio in agriculture decreased to 48% in 1990 compared to 63% in 1979, it is still a very important share. The shares of manufacturing and services in total employment are slightly increasing.

Table 6
Sectoral distribution of the employment

	1979	1985	1990
Agriculture	63	59	48
Manufacturing	10	11	14
Services	26	28	31

Source: SIS, 1992

However, an industry's capacity to generate employment is not limited only to its employment creation effects in that specific industry. Its capacity of creating employment in other sectors of the economy is also of crucial importance. In a formal language the employment creation effects of a certain industry are not measured only by its direct employment effects, which indicate the labor required by that industry to produce a given output, but also and more importantly by its indirect employment effects which indicate the labor required by those industries that supply intermediate inputs to the first industry. What really counts, is total employment which corresponds to the sum of direct and indirect labor requirements.

The relationship between direct and indirect employment which varies with each industry, can be quantified empirically through the use of the Leontief inverse matrix of an input-output table. Sectoral output multipliers which are exactly the direct and indirect domestic output effects of a TL change in the final demand for the sector's output, are simply the column sums of the Leontief inverse matrix (Leroy, 1976: 328-30), and give us total employment requirements per unit of final output. If we denote a single element of the Leontief inverse matrix with l_{ij} , we can show the multiplier effect of sector j as:

$$m_j = \sum_{i=1}^n l_{ij} \quad (3)$$

Table 7 provides direct and indirect output multipliers or backward linkages for the 12 sectors in the years 1979, 1985 and 1990. A notable pattern emerges in Table 7 which is that the manufacturing subsectors tend to generate greater output and employment effects on the economy per TL delivery of final demand than any other non-manufacturing subsector except for construction.

Table 7
Sectoral output multipliers for three selected years in Turkey

	1979	1985	1990
01 Agriculture	1.404	1.622	1.519
02 Mining	1.364	1.487	1.426
03 Food, beverage & tobacco	2.177	2.513	1.906
04 Textile and leather products	2.025	2.311	2.102
05 Lumber and wooden products	2.040	2.230	2.310
06 Pulp, paper & printing	2.056	2.249	2.729
07 Petroleum, chemical & rubber products	1.715	2.285	2.249
08 Metallic & non-metallic minerals	2.088	3.027	2.296
09 Machinery & transport equipments	1.972	2.340	2.293
10 Other manufacturing	1.640	1.859	1.801
11 Construction	2.098	2.318	2.182
12 Trade, transport & services	1.299	1.494	1.478

Source: SIS, 1979; 1985 and 1990

(Calculated from the 1979, 1985 and 1990 Input-Output Tables for Turkey)

Since the years examined in this paper, showed mixed results about their industry multiplier effects, it is better to analyze each year separately. In the first column of Table 7 showing the sectoral output multipliers for the year 1979, light manufacturing, such as food, beverage and tobacco and textile and leather products, seems to create generally large output multiplier effects and probably large employment effects given the relatively high labor intensity in these industries. With respect to the multiplier effects of resource-based industries, these effects are shown to be high in lumber and wooden products and pulp, paper and printing industries probably because of the comparatively simple production technology used in these industries. By contrast the output multipliers of the petroleum, chemical and rubber

products industry is the lowest of the manufacturing sectors, probably because of high energy costs. The multiplier effect of metallic and non-metallic mineral products is strong. These strong multiplier effects, as suggested in Park (1989: 370-73), may be due to the relatively capital-intensive production usually found in these industries since an industry which uses a great deal of capital is likely to generate more interactions with other industries than one which uses a lot of labor but not many other inputs. The multiplier effect of machinery and transport equipment is seen to be relatively small. The weak direct and indirect employment effects in year 1979 can be attributed to the properties of ISI. The 1979 coincides with the second phase of the ISI period which consists of the production of intermediate and investment goods. This phase coincides with policies aimed to increase the domestic demand. One way of doing this is to adopt high wage policies in the industrial sectors, and expansionary monetary policies for the non-industrial sectors. This leads to an increase in the propensity to consume and a decrease in the propensity to save (Doğruel, 1989: 66-9). A low savings rate causes investments to decline and decreases employment possibilities. The increasing capital intensity in the production structure of the manufacturing industry, the increased import dependence due to the import of technology needed in the production process of capital goods, and the resulting oligopolistic market structures led to deterioration of interindustry linkages and aggravated the employment problem. These problems have occurred in Turkey in the second phase of ISI and were of an endemic nature especially in 1979. Additionally, 1979 was a crisis year due to continuously increasing external debts and high rates of inflation accompanied by rising oil prices. Because of these negative economic conditions accompanied by the negative effects of the second phase of ISI, linkages between different sectors of the economy were weakened considerably.

When the 1985 sectoral output multipliers are analyzed, it is easily seen that all industries without exception have increased their direct and indirect backward linkages. This means that in the initial period of the EOI strategy, the interindustry linkages show a relatively more developed picture, consequently creating more output and employment effects. The subsector with the highest direct and indirect backward linkages is found to be the metallic and non-metallic mineral products sector. An important difference between the 1979 and the 1985 multiplier columns in Table 7 arises in the machinery and transport equipment and petroleum, chemical and rubber products sectors. The output multipliers of both subsectors have risen considerably in 1985 and are between the highest values. The reason for this

increase can be the use of different technologies after the EOI strategy was put in effect. In various studies such as Kepenek and Yentürk (1994: 330) and Ruben (1994: 80) it is shown that between all the manufacturing subsectors the chemical, petroleum and rubber products sector is the sector which has increased its value added per person the most, when the pre-1980 and post-1980 industrialization strategies are compared. As the value added per person has increased it is more probable that less labor-intensive technologies are used in the EOI strategy period and even if the use of less labor-intensive technologies in the 'chemical, petroleum and rubber products' sector has caused employment losses in that particular sector, it has caused very important employment gains in the economy as a whole and especially in the services sector. So, its total employment effects are likely to be positive. An important conclusion derived from this fact is that it is possible for a relatively less labor-intensive technology to create more employment when the direct and indirect employment effects are analyzed together. This fact is supported also by Nelson (1986: 111-7) who has demonstrated that it is theoretically possible for a relatively capital-intensive new technique to increase employment. Gang and Gangopadhyay (1987: 321-7), who analyzed the effect of labor-intensive technology on the level of urban unemployment, showed under quite reasonable conditions that choosing a labor-intensive technology will actually aggravate the employment problem.

In 1990, the year when the long term results of the 1980 stabilization policies began to be felt, all the sectors except lumber and wooden products and pulp, paper and printing have decreased considerably their output multipliers. This means that in this period, the output and employment creation effects of the majority of sectors weakened. In 1990, unlike the years 1979 and 1985, the multiplier effects in light manufacturing are very weak. The food, beverage and tobacco industry's output multiplier is even weaker than that of 1979. The multiplier effect of capital goods' industries, mainly machinery and transport equipment is smaller in 1990 compared with 1985. With respect to the resource-based industries, the 'petroleum, chemical and rubber products' and metallic and non-metallic mineral products' output multipliers are smaller than the 1985 ratios. The only sectors which increased their output multipliers are lumber and wooden products and pulp, paper and printing. One reason for the high multiplier values in these industries may be the comparatively simple production technology used, but a stronger reason appears to be the sharp decline in the multiplier values of all other sectors. In other words, the multiplier values of lumber and wooden products and pulp, paper and printing are

not very high *per se*, but they can be considered high in comparison to importantly low values in all the other sectors.

The multiplier effects of primary sectors (agriculture and mining) increased in 1985 compared with 1979, but they decreased in 1990 compared with 1985. The construction sector have very strong multiplier effects in each of the three years. The multiplier effects of trade, transport and services tend to be considerably lower than those of the manufacturing sector or construction.

To assess the impact of industry on the service sector, it would be useful to compare the strength of backward linkages of different industries with the service sector (Table 8). When the years of 1979 and 1985 are compared it is seen that the direct and indirect backward linkages with the service sector in 1985 are higher than those for the year 1979. This fact demonstrates that the shift from an inward-looking strategy to a more outward-oriented one, has increased the linkages of all sectors with the service sector and thus increased the employment opportunities in that sector. The most striking difference appears to be in petroleum, chemical and rubber products sector. The reason can lie in the changed industrialization strategy. It is very probable that the use of less labor-intensive technologies in the outward-oriented period has caused employment losses in that particular sector, but meanwhile it has caused very important employment gains in the service sector.

In 1990, the situation is not as good as 1985. Most manufacturing subsectors have decreased their backward linkages with the service sector compared with 1985. The three sectors which have increased their backward linkages with the services sector are pulp, paper and printing; petroleum, chemical and rubber products; machinery and transport equipments.

1990 represents a year when the long term consequences of the post-1980 adjustment policies can be seen more clearly and if the post-1980 policies are really export-oriented, the intersectoral linkages and output multipliers are expected to develop. But just the reverse has occurred. This may be attributed to diverse factors. First of all, it is known that the most important part of the export increases after 1980 have been realized by export subsidies, tax rebates, export credits and duty-free imports. Other policies adapted in order to increase the exports were the exchange rate policy and the austerity program. This means that the success in the export sector was entirely due to monetary factors and consists of short-term solutions to the problem. Generous export incentives were also in conflict with the liberalization program, since in a liberalization process the domestic production

should not be protected against foreign competition (Kepenek and Yentürk, 1994:190).

A genuine EOI strategy should be based on the creation of new capacities in order to increase the ratio of the manufacturing sector in the exports. In the post-80 Turkish experiment much of the growth of manufacturing output was due to increased capacity utilization rather than the creation of new capacities (Şenses, 1990)¹. One important fact contributing to export increases was the accumulation of industrial capacity in the ISI period. In this regard it is difficult to say that the post-1980 structural adjustment policies were really based on a strategy of EOI.

The fact that the increase in exports was mostly due to the protection of the export sector in a variety of ways and not due to notable changes in the production process has led to the deterioration of interindustry linkages and of employment-creation effects. As Rodrik (1990: 191) implies, a sound export performance must rely on structural change and adequate investment in exportable sectors. Both of these require a stable macroeconomic environment and a climate of steady, predictable policy-making that derives from fiscal prudence. Another fact responsible from the deterioration of the interindustry linkages is the sharp increase in imports after 1985. Imports of investment goods increased from 22.9% in 1985 to 26.5% in 1990, while imports of consumption goods increased from 8.0% to 12.9% as a share of total imports, between the same years. Although there is no increase in the imports of intermediary goods, it is still realized at a very high rate (60%). There is also an important decrease in the export-import compensation ratio from 70.2% in 1985 to 58.1% in 1990 (SIS, 1993). The decrease of this ratio can be attributed both to the increase in imports and to the decrease in exports. The increase in imports can lead to the deterioration of domestic interindustry linkages since the required commodities are bought from foreign countries and not from domestic industries. Another factor explaining the deterioration of the interindustry linkages is the extent to which financial liberalization progressed in a macroeconomically unstable environment. One of the most important aims of post-1980 policies was financial liberalization, one of its manifestations being the observance of positive real interest rates. Financial liberalization, it was believed, would increase the domestic savings and thus investments. Moreover, in studies estimating the relation between savings and interest rates in Turkey, (e.g. Uygur (1993) and Akyüz (1991)) a strong relationship was not found. The empirical results

¹ Liang (1992: 450) in a study on the typology of trade strategies, used the term "protected export promotion" as a new category of trade strategy and analyzed Turkey in this category.

of these two studies on private savings and investment indicate that financial liberalization has not raised the private savings and investment rates.

High interest rates, one of the main results of the post-1980 policies, have had very negative effects on the productivity conditions of Turkey. They have caused the decrease of fixed capital investments and of technological improvements. In this way only the sectors which use cheap labor were viewed as important in the international competition. Another development regarding the production possibilities of the country, was that the share of productive sectors in the distribution of credits, was decreased (Kepenek and Yentürk, 1994: 324).

Another possible factor explaining the decrease in interindustry transactions is the increase in intraindustry transactions. As it is clearly shown in Table 2 and 3, the intraindustry transactions between manufacturing sectors are increased from 51% to 56%, and intraindustry transactions between service sectors increased from 38% to 48% between 1985 and 1990. The increase in intra industry transactions may lead to decreases in the interindustry transactions. This is a subject for future research.

Table 8

Direct and indirect backward linkages with the service sector in three selected years

	1979	1985	1990
01 Agriculture	0.092	0.128	0.132
02 Mining	0.177	0.119	0.127
03 Food, beverage & tobacco	0.189	0.287	0.199
04 Textile & leather products	0.296	0.314	0.213
05 Lumber & wooden products	0.230	0.245	0.262
06 Pulp, paper & printing	0.237	0.312	0.364
07 Petroleum, chemical & rubber products	0.074	0.288	0.218
08 Metallic & non metallic minerals	0.347	0.346	0.281
09 Machinery & transport equipment	0.215	0.271	0.314
10 Other manufacturing	0.159	0.177	0.170
11 Construction	0.363	0.251	0.292
12 Trade, transport & services	1.092	1.153	1.185

Source: SIS, 1979; 1985 and 1990

(Calculated from the 1979, 1985 and 1990 Input-Output Tables for Turkey)

3. Conclusion

The first important result that has arisen from this study is that not only in the outward-oriented period, but also in the import-substitution period, a fairly well-developed manufacturing sector existed in Turkey. The high dependency ratio of services on manufacturing (% 59) and the 48 % dependency ratio of manufacturing to itself supporting provide evidence to the argument. This means that Turkey has intelligently used one of the main advantages of the ISI strategy which is learning-by-doing. It is argued in much of the ISI literature that it produces searching and learning on the part of all economic agents. Especially, in the second phase of ISI, the transfer of technology from abroad in order to produce capital goods created a learning effect and realized the easy understanding and the use of technology. Consequently, the knowledge and experience gained in this way contributed significantly to the development of the manufacturing industry.

The second important result is that the post-1980 export-oriented policies have not been sufficiently successful in changing the structure of employment from industry to services. The dependency ratio of manufacturing on services has increased from 4% in 1979 to 5% in 1985 and to 5.5% in 1990. The ratio of services with high income elasticity of demand, in total private consumption has increased to 12% in 1985 from 10% in 1979, while it has decreased to 9% which is even lower than the 1979 ratio. This means that although in 1985, that is, in the initial periods of post-1980 policies, there was a slight shift from industry to services, in 1990 this shift is reversed.

Third, with respect to the sectoral output multipliers, it is seen that in 1979 manufacturing subsectors created very weak employment effects while, in 1985 output multipliers and especially backward linkages with the service sector increased considerably. In 1990, almost all manufacturing subsectors output multipliers are lower than the values in 1985, but higher than the values of 1979. One interesting observation is that the output multiplier for food, beverage and tobacco subsector is even smaller than its 1979 value. Another subsector which shows an interesting trend is the chemical, petroleum and rubber products sector. In 1979, the output multiplier and backward linkages of this risen with the service sector was the lowest among manufacturing subsectors. In 1985, both its output multipliers and its backward linkages with the service sector increased. The chemical sector is ranked first both in the output multiplier values and in the backward linkages with the service sector.

We can conclude by saying that by the shift from an inward-looking industrialization strategy to a relatively more outward-oriented one, intersectoral linkages have developed and thus the employment effects of industrialization increased. But within the outward-oriented period, while a notably good performance in terms of intersectoral linkages and thus employment-creation effects can be seen in 1985, the same performance was not observed in 1990.

The development of the intersectoral linkages and the consequent increase in the employment performance due to the change of the industrialization strategy is in accordance with what is expected. Additionally, 1985 was a year showing the first results of the EOI strategy, a passage from a period of crisis to an improved situation.

Part of the weakening of the interindustry linkages and industry output multipliers can be attributed to the fact that the export performance achieved in the first years of the 1980s was due to the high degree of protection in the export sector. Between other factors affecting the weakening of the interindustry linkages, the import boom after 1985 and the excessive financial liberalization in a macroeconomically unstable environment are of considerable importance. Macroeconomic stability and investments directed to productive sectors are of primary importance for gaining long-term competitive advantage in world markets, while at the same time increasing employment.

The proposition that the increase in intraindustry linkages may partly explain the decrease in interindustry linkages requires further investigation.

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Özet

Türkiye'de sektörlerarası bağımlaşma ve istihdam üzerindeki etkileri: 1979, 1985 ve 1990 için karşılaştırmalı bir I/O analizi

Bu çalışmanın amacı Türkiye açısından sanayileşmenin istihdam etkilerini incelemektir. Bu amaçla 1979, 1985 ve 1990 yıllarının girdi-çıkıtı tabloları kullanılarak endüstriler arası bağlar incelenmiştir. Elde edilen sonuçlara göre her yıl için tüm sektörlerin imalat sektörüne bağımlılık oranları yüksektir. Bu, incelenen yıllarda gelişmiş bir imalat sanayiinin varlığını gösterir. Diğer bir sonuç 1980 sonrası uygulanan dışa yönelik politikaların, istihdamın yapısını sanayiden hizmetler sektörüne kaydırmada başarılı olmamasıdır. Sektörel çıktı çarpanları incelendiğinde elde edilen sonuç şudur: İçe yönelik sanayileşme sürecinden dışa yönelik sanayileşme sürecine geçildiğinde genel olarak sektörler arası bağlar ve dolayısıyla sanayileşmenin istihdam yaratma etkileri artmıştır. Fakat dışa yönelik sanayileşme dönemi içinde ilk yıllarda görülen sektörler arası bağlardaki artış sonraki yıllarda önemli ölçüde azalmıştır.