# **Openness to Trade and Unemployment in the Turkish Manufacturing Industry**

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#### Abstract:

This study examines the impact of foreign trade on employment in the Turkish Manufacturing Industry during 1983-2004 by employing an accounting approach. After calculating Net Import Penetration (NIP) coefficients for each manufacturing industry, we investigate the impact of import competition on sectoral employment for four sub-periods: 1984-1989, 1990-1994, 1995-2000, and 2001-2004. Following this, we decompose the changes in employment into three components reflecting the changes in domestic consumption, labour productivity, and the share of domestic output in consumption.

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#### I. Introduction

Turkey has undergone two drastic changes in her international trade regime since the 1980s, becoming more prone to economic shocks in the world economy. One of these changes took place as a gradual process beginning in 1983, which attempted to shift the trade regime from an inward-oriented trade regime towards a relatively open one. The second corresponds to an even more radical one in 1995 with the start of implementing Custom Union agreement with the European Union. The volume of trade has been increasing year by year, and the Turkish economy has become increasingly exposed to international competition particularly to importation. Today, increased current account deficits and ongoing unemployment raise a concern among policy makers and public, of whether or not openness to trade and especially high exposition to importation should be accounted for these undesirable outcomes of the liberal trade regime.

Recent studies on Turkey have constantly revealed that employment generation capacity of the economy has significantly declined in recent years. Besides, the link between economic growth and employment appears to have weakened in the 1990s (Günçavdı and Küçükçifçi, 2002, 2004, and 2005; Günçavdı *et. al.*, 2003). Trade liberalisation and globalisation has received serious attention to take responsible for the persistent unemployment and low employment generation capacity of the economy in general, of manufacturing in particular.

The recent performance of the Turkish economy seems to be astonishing after a large-scale economic crisis in 2001. Despite a 7 percent decline in GDP in 2001, the Turkish economy grew, on average, by 7 percent between 2002 and 2006. In particular the economic growth rate was around 9 percent only in 2006. According to many international observers, favourable international conditions, good macroeconomic reforms, the beginning of the accession talk with the EU and finally a single party government are accounted for this distinguished performance of the Turkish economy.

There is an ongoing controversy concerning the likely impact of trade on employment. The *Heckscher-Ohlin-Samuelson* (HOS) framework provides the first clear prediction of this issue. Trade in this framework derives from differences in relative factor endowments between countries. When trade barriers are removed, import substitute sectors contract as export sectors expand.

The aim of this study is to make an empirical assessment of the impact of trade on employment

in the Turkish manufacturing industry. It is done by employing an accounting approach based on manufacturing sector survey data for the period between 1983 and 2004. We divide the whole sample period into four sub-periods, each of which possesses different characteristic features in terms of macroeconomic policy and international economic environment. These sub-periods are 1984-1989, 1990-1994, 1995-2000, 2001-2004. We first aim to examine how increased import competition in the liberalisation period affected employment, and we calculated Net Import Penetration (NIP) coefficient for each manufacturing industry for this purpose. Having analysed the extent of exposition of each industry to import competition, basing on this coefficient, we also decompose changes in employment into three distinctive components in order to see other likely factors affecting manufacturing employment. These sub-periods are namely the growth rates in domestic consumption, labour productivity and the share of domestic output in consumption (import substitution).

Data used in this study is obtained from TURKSTATs annual surveys of manufacturing industry, disaggregated at the three digit ISIC level for the 1983-2000 period, and at the two digit NACE level for the 2002-2004 period. All data are deflated.

#### **II. Import Penetration and Comparative Advantage**

In order to examine how increased import competition in the liberalisation period affected employment, we first calculated Net Import Penetration (NIP) coefficient for each manufacturing industry:

(1) 
$$NIP_{ii} = \frac{(M_{ii} - X_{ii})}{(Q_{ii} + M_{ii} - X_{ii})}$$

 $Q_{it}$  in the above expression stands for the output produced in sector *i* at time *t*,  $M_{it}$  and  $X_{it}$ , respectively, are the corresponding imports and exports.

The calculated NIP ratios for the selected years and the percentage distribution of labour force among sectors are reported in Table 1a and 1b. The summary statistics for these calculations are given in Table 2a and 2b.

A positive NIP ratio for the sector indicates a comparative disadvantage and a negative value indicates a comparative advantage for the sector at hand. Examining the figures in Table 1a, out of 25 sectors in the manufacturing industry, 13 to 18 sectors have positive NIP ratios in the years examined. These sectors accounted for 42.2% of the labour force in 1983-84, 56.8 % in

1989-90, 41.9% in 1994-95, 47.7% in 1999-00, 48.4% in 2002, 46.1 % in 2003, and 47.4% in 2004. The level of import penetration is calculated to be very high in sectors of industrial chemicals (351), machinery (382), and professional goods (385) for all years examined. Import penetration has deepened for paper and products (341), and electrical machinery apparatus (383) while it is decreasing in professional goods (385). Furniture and fixtures (332), which had a strong comparative advantage has turned into a disadvantaged position in the past 10 years. Tobacco (314), on the other hand has switched from a strong disadvantaged position to an advantaged one. The comparative advantage of glass and products (362) has been decreasing over the years examined.

Turning to results in Table 1b, out of 22 sectors, 15 sectors have experienced a disadvantage for the years 2002 to 2004. These sectors accounted for 46-48% of the labour force. The level of import penetration is calculated to be very high in most of the sectors with positive NIP ratios. These sectors are: wearing apparel, dressing and dying of fur (18); chemical and chemical products (24); pulp, paper and paper products (21); basic metals (27); machinery and equipment n.e.c. (29); office machinery and computers (30); electrical machinery and apparatus (31); radio, television and communication equipment (32); medical, precision and optical instruments, watches and clocks (33); and other transport equipment (35). Fabricated metal products, except machinery (28) switched from a disadvantaged position to an advantaged one with a sharp increase in the absolute value of the NIP ratio, signalling that this sector has been experiencing rapid changes. Transport equipment (34), on the other hand, has switched from an advantaged position to a disadvantaged one. Textiles (17), accounting for the 17-19% of the employment, and other non-metallic mineral products (26) have a strong comparative advantage for these years. In absolute terms, the NIP ratio is on an increasing path for furniture, manufacturing n.e.c. (36).

(INSERT TABLE 1a and TABLE 1b) (INSERT TABLE 2a and TABLE 2b)

#### **III. Import Penetration, Exports and Sectoral Employment**

High levels of import penetration is associated with a decrease in employment numbers. To be able to validate the impact of import penetration on sectoral employment, we have estimated what the employment figures would be if the sectors on hand were not exposed to import penetration and then compared these figures with the actual employment numbers. This method was first suggested by Luttrell (1978) and is applied by various studies such as Borkakoti (1997).

This approach involves calculating an  $\alpha$  parameter first:

$$\alpha = \frac{1 - NIP_t}{1 - NIP_{t+n}}$$

We then define  $L_{t+n}^* = \alpha L_{t+n}$ , where  $L_{t+n}^*$  and  $L_{t+n}$  are, respectively, the estimated and the actual employment in the sector on hand. Equal NIP ratios at time t and t+n (*i.e.*  $NIP_{t+n} = NIP_t$ ) implies that the level of import penetration has not changed over time, yielding  $\alpha = 1$  and hence no decreasing impact of import penetration on employment ( $L_{t+n}^* = L_{t+n}$ ). If, on the other hand, an increase in NIP ratio is observed ( $NIP_{t+n} > NIP_t$ ), the value of  $\alpha$  will be higher than 1. In this case, the value of estimated employment would be higher than the actual number, reflecting the unfavourable effect of import penetration in the economy.  $\Delta L_M = L_{t+n}^* - L_{t+n}$ , therefore will show the change in employment within time period t to t+n, caused by the change in import penetration. Note that an increase in the NIP ratio for a sector in an advantaged position still has a similar effect. A sector in an advantaged position (i.e. sector with a negative NIP ratio) might still be in an advantaged position at the end of the period but in a state worse than the initial level. This might also cause losses in employment<sup>1</sup>.

We have estimated what the employment figures would be if there were no change in the level of import penetration for the sectors on hand and then compared these figures with the actual employment numbers. During these comparisons, it was also crucial to consider the level of exports for these sectors and the changes that they experienced during the specified time period. A traditionality index (Piñeres and Ferrantino, 1999) is calculated for each sector and time period<sup>2</sup>.

The traditionality index value ranges from zero to one. Its value is equal to 0.5 for sectors that have the same level of exports each year, and less (higher) than 0.5 if the exports of the sector is increasing (decreasing) over time. Sectors with an index value equal to 0.5 are said to be "traditional" while the others are "non-traditional" – the ones with an index value less than 0.5 are getting closer to being traditional while the ones with an index value higher than 0.5 are moving away from being traditional.

<sup>&</sup>lt;sup>1</sup> See Table A1 for a detailed explanation.

<sup>&</sup>lt;sup>2</sup> See Appendix for the details.

In order to evaluate the impact of import penetration on employment, we have first grouped the sectors by comparing their positions in import competition at the initial and terminal periods. As explained above, employment is expected to decrease for the sectors which have an increasing comparative disadvantage as well as for those which have a decreasing comparative advantage over the period examined. Similarly, it is expected to increase for the sectors that have a decreasing comparative disadvantage or an increasing comparative advantage. We have then differentiated the sectors within each group by their export position. The sectors within the one standard deviation interval from the mean are grouped as traditional.

#### (INSERT TABLE 3a to 3c)

The calculations are shown in Tables 3a to 3e. Following the sector code and names, the first two columns give the initial and terminal NIP ratios calculated. The next two columns give the respective employment numbers and columns five and six are the respective percentage employment shares of each sector. The observed change in employment ( $\Delta L = L_{t+n} - L_t$ ), and the change in employment only due to changes in import penetration ( $\Delta L_M = L_{t+n}^* - L_{t+n}$ ) are, respectively, given in the last second and third columns. Finally, the last column shows the export position of the sector, which is obtained by traditionality index calculations. A positive (negative) value for  $\Delta L$  indicates an increase (decrease) in observed employment figures from the initial to the terminal period. A positive  $\Delta L_M$  value shows the number of job losses due to a change import competitiveness while a negative  $\Delta L_M$  value shows the number of new jobs created with changes in import competition<sup>3</sup>. For all the years considered, not only the majority of the manufacturing sectors have a comparative disadvantage, but also the majority of these disadvantaged sectors have been experiencing an increase in NIP ratios since the 90's.

Because of the change in sectoral classification after 2000, we will be examining the pre- and post 2000 separately. Within the 1983-2000 time interval (Table 3a to 3c), in all the periods, textile (321) has the highest employment share in the manufacturing industry with a comparative advantage and a traditional export structure. Because it has the highest employment share, a decrease in its comparative advantage creates a big impact on its employment. Textiles has employed 24,100 workers within the 1983-84 and 1989-90 period

<sup>&</sup>lt;sup>3</sup> Interpretations for different combinations of these values are as follows: Both  $\Delta L_M$  and  $\Delta L$  greater than zero: employment has increased during the period examined, but it could have risen more if there were no change in import competition;  $\Delta L_M$  greater and  $\Delta L$  less than zero: employment has declined during the period examined, but this decrease would not have been observed or would be less if there were no change in import penetration;  $\Delta L_M$  less than and  $\Delta L$  greater than zero: employment has increased and it would have been at a lower level if there were no change in import penetration;  $\Delta L_M$  and  $\Delta L$  less than zero: employment has decreased and it would have decreased more if there were no change in import penetration.

and it would have employed 15,100 more if there were no change in import penetration. Similarly, within the 1989-90 and 1994-95 period, the employment figure at the end of the period would be 6,300 higher than what is observed, meaning an increase of 6,200 workers in employment instead of a 100 people fall. This sector has experienced an increase in comparative advantage between 1994-95 to 1999-2000, creating 26,600 additional jobs. Textiles has created 84,500 new jobs in this period.

During the whole period examined, food (311) has the second highest employment shares in manufacturing. This sector also has a comparative advantage for all the periods. In the first period (1983-84 to 1989-90), the comparative advantage of food decreased, eliminating 5,200 additional job opportunities. Even with this decrease, employment has risen by 10,700. There is not a very significant change in the employment numbers of this sector for 1989-90 to 1994-95 but it has increased by 15,900 in the third period (1994-95 to 1999-2000) examined.

In the first period (1983-84 to 1989-90), tobacco (314), leather and products (323), paper and products (341), and other manufacturing products (390) had a deepening comparative disadvantage. The employment shares of each of these sectors were 1.5 percent or less than that. Despite the negative effect of import penetration, employment in tobacco (314) and paper and products (341) has increased, due to higher rates of increase in consumption (Table 4a). For the sectors with a decreasing comparative disadvantage in this period, transport equipment (384), machinery (382) and metal fabricated products (381) have the highest employment gains from a decrease in import penetration. Furniture and fixtures (332) had experienced the highest decrease in comparative advantage among the sectors in the third group. Although this sector's share is very low in manufacturing employment, this significant decrease creates a very high employment effect. Within this first period, footwear is the only sector with an increasing comparative advantage.

Turning to the results for the second period (1989-90 to 1994-95) that we examine, there was an increase in the number of disadvantaged sectors. Job losses were observed in most of the sectors during this period. Industrial chemicals (351), and other chemical products (352) are the two sectors facing the impacts of a deepening comparative disadvantage the most. Among all the sectors, textile (321) is the one with the highest potential impact of a change in import penetration, following that comes the food. In this dark picture with job losses observed in most of the sectors, transport equipment (384) seems to have done quite well with a 6,500 increase in employment. Only 300 of this is due to a decrease in import penetration.

Following many job losses in the second period, the third period experienced employment increases in many sectors. Textiles employed 84,500 workers, 26,600 of which is due to an increase in its comparative advantage. Despite a worsening in their disadvantaged position, electrical machinery apparatus (383), and metal fabricated products (381) employed, respectively, 20,100 and 19,400 new workers. The figure would be much higher for electrical machinery apparatus (383) if there were no change in its import penetration.

#### (INSERT TABLE 3d to 3e)

Table 3d and 3e present the results for 2002-2004, examining yearly changes. One striking result in Table 3d is the 25,900 job losses in the food products and beverages (15) despite its increasing comparative advantage. If there were no change in trade competitiveness, 30,000 more workers would be losing their jobs. Textiles (17), an other sector with high rates of employment would employ 96,300 less workers if its comparative advantage did not increase in this period.

The highest number of job creations was observed in the wearing apparel, dressing and dying of fur (18) from 2003 to 2004 with 42,700 new jobs. The highest number of job losses due to an increase in import penetration is observed in transport equipment (34), chemical and chemical products (24), electrical machinery and apparatus (31), and leather and leather products (19). Despite the increase in import penetration, the employment numbers in all sectors have risen.

#### **IV. Decomposition**

Following this examination on the changes and its effects on employment, we decompose the changes in employment into three distinctive components in order to see other likely factors affecting manufacturing employment (Martin and Evans, 1981). These components are, namely, the growth rates in domestic consumption, labour productivity and the share of domestic output in consumption (import substitution).

Define domestic consumption as

$$(3) C_{it} \equiv Q_{it} + M_{it} - X_{it}$$

where Q is the domestic output, M and X are, respectively the imports and exports. Average labour productivity is defined as:

(4) 
$$A_{it} = \frac{Q_{it}}{L_{it}}$$

where L is the employment for sector i at time period t.

Defining the ratio of domestic output to consumption,  $S_{it} = \frac{Q_{it}}{C_{it}}$ , and substituting this for  $Q_{it}$  in Eq. (4), we get:

(5) 
$$L_{it} = S_{it} \frac{C_{it}}{A_{it}}$$

Note that  $S=(1-NIP)^4$ . Logarithmically differencing Eq. (5) with respect to time, we obtain the following:

(6) 
$$\frac{N}{L} = \frac{N}{C} + \frac{N}{S} - \frac{N}{A}$$

Defining  $\hat{C}$ , as the rate of growth of apparent consumption;  $\hat{S}$ , the rate of growth of the ratio of output in consumption;  $\hat{L}$ , the rate of growth of employment; and  $\hat{A}$  the rate of growth of labour productivity, we re-write Eq. (6) as follows:

$$\hat{L} = \hat{C} + \hat{S} - \hat{A}$$

Tables 4a to 4e present the decomposition results<sup>5</sup>. In the tables, the sum of  $\hat{C}$ ,  $\hat{S}$ , and  $-\hat{A}$  give  $\hat{L}$ . A negative value for  $\hat{S}$  shows that the share of output in consumption has decreased, implying an increase in import penetration.

#### (INSERT TABLE 4a to 4e)

The decomposition results are reported in Tables 4a to 4e. In the first period examined, labour productivity is estimated to have a negative effect in all sectors and the rate of output in

<sup>4</sup> 1-NIP=1-
$$\frac{(M-X)}{(Q+M-X)} = \frac{Q+M-X-(M-X)}{(Q+M-X)} = \frac{Q}{(Q+M-X)} = \frac{Q}{C}$$

<sup>&</sup>lt;sup>5</sup> The rates of growth are calculated by using the following standard formula,  $A_t = A_0(1 + r)^n$ , where  $A_0$  is the initial value,  $A_t$  is the value at period t, n is the difference between the initial period and period t. r, here, is the average annual rate of growth.

consumption (*i.e.* the impact of import penetration) was negative in 14 out of 25 sectors. But a decrease in employment was observed only in leather and products (323) and other manufacturing products (390), by 0.2 percent and 0.3 percent respectively. The negative impacts of increases in import penetration and in labour productivity were offset by increases in domestic consumption. Furniture and fixtures (332), for example, is one of the sectors experiencing large negative impacts of labour productivity and import penetration, but still an increase in employment is observed due to a 33.3 percent increase in domestic consumption. Professional goods (385), one of the sectors with a comparative disadvantage, has seen a decrease in its NIP ratio, which had an increasing effect of 17.9 percent in employment.

The results for 1989-90 to 1994-95 period show the deep impact of the 1994 crisis. There were job losses in many manufacturing sectors. The decomposition results suggest that this negative change in employment is due to changes in labour productivity as well as changes in trade competitiveness. Rate of change in consumption has a positive effect on employment in all sectors, but tobacco (314). The decreasing employment in tobacco (314) is not due to import competition but labour productivity and consumption.

In the 1995-2000 period, number of negative values for the rate of change in consumption has increased. Labour productivity changes seems to have increased employment in some sectors, suggesting productivity declines. Despite the negative impacts of the import penetration, job losses were only observed in beverages (313) and industrial chemicals (351) with low percentages.

#### **V.** Conclusion

This study has examined the trade competitiveness of sectors and its employment effects in the manufacturing industry for 1983-2004. The whole sample period is divided into four subperiods of 1984-1989; 1990-1994; 1995-2000; 2001-2004. Net import penetration ratios are calculated first. After differentiating sectors with a comparative advantage and disadvantage, the employment effects of import competition is calculated. A standard accounting identity method is then used to decompose the changes in employment into parts arising from changes in consumption, in the ratio of output in consumption – which is a measure of effects of import penetration - and the changes in labour productivity. While commenting on the results, the sectors are also subgrouped according to their export performance.

In all the periods examined, textiles and food have the highest shares in manufacturing employment. Non-metallic mineral products, metal fabricated products, machinery, and

transport equipment also have employment shares higher than five percent. Consequently, these sectors are more prone to changes in import competition. After the calculations, the deep impact of the 1994 crisis is observed once again. The employment figures declined in almost all sectors at the time.

Although the decomposition results hint the potential impacts of changes in consumption or labour productivity as well as the changes in import competition, the next step would be to employ a regression analysis framework in order to be able to differentiate other factors causing employment losses or increases.

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#### Appendix. Calculation of the traditionality index

The traditionality index requires calculation of a cumulative export experience first (Piñeres and Ferrantino, 1999):

$$c_{it} = \frac{\sum_{t_0}^{t} e_{it}}{\sum_{t_0}^{t_1} e_{it}}$$

where  $e_{it}$  shows the value of exports of sector i at time t.  $t_0$  and  $t_1$ , respectively, show the beginning and the end of the time period examined. Therefore,  $c_{it}$  shows the proportion of cumulative exports from  $t_0$  to t (*i.e.* exports from the initial year to the year in question) in the total exports from  $t_0$  to  $t_1$  (*i.e.* total exports during the period examined).

Traditionality index is an arithmetic mean of the cumulative export experience index, which is calculated by the following expression:

$$T_{i} = \frac{\sum_{t_{0}}^{t_{1}-1} c_{it}}{t_{1}-t_{0}}$$

This index value ranges from zero to one. Its value is equal to 0.5 for sectors that have the same level of exports each year, and less (higher) than 0.5 if the exports of the sector is increasing (decreasing) over time. Sectors with an index value equal to 0.5 are said to be "traditional" while the others are "non-traditional" – the ones with an index value less than 0.5 are getting closer to being traditional while the ones with an index value higher than 0.5 are moving away from being traditional.

		1983-8	<b>4</b> <sup>+</sup>	1989-9	90 <sup>+</sup>	1994-9	95†	1999-0	00+
			% of		% of		% of		% of
			labour		labour		labour		labour
		NIP (%)	force	NIP (%)	force	NIP (%)	force	NIP (%)	force
311	Food	-10.2	11.1	-2.8	10.8	-5.2	11.5	-5.0	10.4
312	Other food products	-63.4	1.8	5.4	2.5	-27.0	2.3	-29.2	2.1
313	Beverages	-3.3	1.3	-3.2	1.3	-4.6	1.1	-2.1	0.8
314	Tobacco	9.5	0.8	43.3	0.8	-11.4	0.7	-21.3	0.6
321	Textile	-51.8	27.3	-39.8	26.2	-35.0	27.0	-50.3	29.9
323	Leather & products	0.0	1.1	20.0	0.9	31.4	0.9	23.8	0.7
324	Footwear	-12.6	0.6	-27.2	0.5	-41.1	0.8	0.9	0.9
331	Wood Products & cork	-50.4	1.4	1.4	1.4	2.6	1.3	14.9	1.3
332	Furniture and fixtures	-168.2	0.8	-5.4	0.8	1.5	1.2	3.8	1.7
341	Paper & products	23.4	1.3	26.8	1.5	28.8	1.8	43.4	1.5
351	Industrial chemicals	66.9	2.5	51.2	2.4	61.7	1.7	69.5	1.2
352	Other chemical products	11.7	3.6	8.5	3.9	16.8	3.9	29.8	3.9
355	Rubber products	-6.3	2.0	2.3	2.0	-3.7	1.7	8.0	1.4
356	Plastic products	-1.0	2.3	4.4	2.4	5.8	2.7	12.1	3.3
361	Pottery, china, etc.	-3.2	1.4	-0.9	1.5	-4.3	1.5	-10.9	1.2
362	Glass & products	-49.7	2.3	-21.9	2.2	-14.8	1.6	-17.4	1.6
369	Non-metallic mineral products	-1.4	5.6	4.9	6.4	-4.8	5.9	-11.4	5.7
371	Iron & steel	19.0	3.5	0.0	4.1	-4.9	3.9	7.7	3.6
372	Non-ferrous metals	32.3	1.5	21.7	1.5	30.4	1.0	35.7	1.1
381	Metal fabricated products	26.7	7.3	10.5	6.1	10.7	6.0	12.3	6.7
382	Machinery	61.5	6.9	53.4	6.3	55.2	5.9	62.9	5.4
383	Electrical machinery apparatus etc.	37.1	5.8	29.1	6.6	28.0	6.1	44.4	6.8
384	Transport equipment	35.9	6.8	20.9	6.9	20.5	8.1	31.1	7.0
385	Professional goods	94.3	0.2	84.7	0.4	83.1	0.5	75.5	0.5
390	Other manufacturing products	24.0	0.9	33.2	0.7	36.6	0.8	35.6	0.7

 Table 1a - Net import penetration of selected manufacturing sectors

† Reported figures are the moving averages of the two years

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Table ID - Net III	Jort penetration of	i selecteu manufac	iuring sectors

		2002	2	200	03	200	4
			% of		% of		% of
			labour		labour		labour
		NIP (%)	force	NIP (%)	force	NIP (%)	force
15	Food products and beverages	-12.0	14.2	-25.7	12.6	-36.3	11.9
16	Tobacco products	-12.6	0.7	-6.5	1.0	-0.7	0.9
17	Textiles	-164.7	18.7	-248.7	18.3	-232.8	17.0
18	Wearing apparel, dressing & dying of fur	193.8	15.6	180.1	16.0	171.7	16.3
19	Leather and leather products	22.7	2.0	27.6	1.9	40.6	1.9
20	Wood and wood products	10.6	2.7	20.9	2.4	30.9	2.5
21	Pulp, paper and paper products	52.9	1.7	61.4	1.4	62.2	1.4
22	Publishing, printing & reproduction of recorded media	16.6	2.1	21.3	2.0	18.6	2.1
23	Coke, refined petroleum products and nuclear fuel	68.0	0.3	70.7	0.3	71.1	0.3
24	Chemical and chemical products	72.2	3.8	71.8	3.6	75.3	3.5
25	Rubber and plastic products	-0.5	3.8	-1.5	4.3	-0.6	4.5
26	Other non-metallic mineral products	-107.5	5.5	-143.1	5.3	-103.4	5.5
27	Basic metals	44.8	3.4	54.8	3.4	49.9	3.4
28	Fabricated metal products, except machinery	13.2	6.0	-38.3	6.0	-53.7	6.4
29	Machinery & equipment n.e.c.	65.3	6.3	66.0	6.6	66.7	6.9
30	Office machinery and compouters	98.4	0.0	97.5	0.0	98.0	0.0
31	Electrical machinery & apparatus	45.8	2.3	51.5	2.2	59.3	2.2
32	Radio, television, and communication equipment	61.2	0.8	60.5	0.9	66.3	1.0
33	Medical, precision and optical instruments, watches	89.7	0.5	87.3	0.5	90.2	0.6
34	Transport equipment	-83.6	3.2	22.4	3.9	39.5	4.2
35	Other transport equipment	55.4	0.9	332.2	1.0	52.9	1.1
36	Furniture, manufacturing n.e.c.	-25.0	5.4	-41.8	6.2	-54.6	6.3
37	Recycling	0.0	0.0	0.0	0.0	0.0	0.0
	· -						

	1983-84	1989-90	1994-95	1999-2000
		NTP		
Minimum value	-168.20	-39.82	-41,10	-50,31
First quartile	-10.18	-0.88	-4.93	-5.04
Median	0.01	5.36	2.58	12.11
Third quartile	26.70	26.77	28.77	35.59
Maximum value	94.31	84.69	83.10	75.49
Range	262.51	124.51	124.20	125.81
Interquartile Range	36.88	27.65	33.71	40.63
Mean	0.82	12.82	10.25	14.55
Std. deviation	51.48	27.00	29.56	31.02
	NIP - exc	cluding outliers		
Minimum value	-63.39	-27.18	-34.96	-50.31
First quartile	-10.18	-0.42	-4.86	-5.04
Median	0.01	6.95	4.19	12.11
Third quartile	26.70	27.94	29.59	35.59
Maximum value	66.89	84.69	83.10	/5.49
Range	130.28	111.86	118.06	125.81
Interquartile Range	130.28	28.36	34.46	40.63
Mean Ctal deviation	4.11	15.02	12.39	14.55
Sta. deviation	24.40 <i>332 385</i>	20.21 321	28.15 <i>324</i>	- 31.02
	Sectors i	n each auartile	027	
		n each quai me		
1 <sup>st</sup> 25%	332, 312, 321,	321, 324, 362,	324, 321, 312,	321, 312, 314,
	331, 362, 324	332, 313, 311	362, 314, 311	362, 369, 361
2 <sup>nd</sup> 25 %	311, 355, 313,	361, 371, 331,	371, 369, 313,	311, 313, 324,
	361, 369, 356	355, 356, 369	361, 355, 332	332, 371, 355
Median	323	312	331	356
2rd 25%	211 252 271	252 201 222	256 201 252	201 221 222
5 25%	341 390 381	384 372 341	384 383 341	352 384 390
	0 11, 0 00, 001	001,072,012	001,000,011	002,001,070
4 <sup>th</sup> 25%	372, 384, 383,	383, 390, 314,	372, 323, 390,	372, 341, 383,
	382, 351, 385	351, 382, 385	382, 351, 385	382, 351, 385
	Employment shares a	of sectors in each	quartile	
1 <sup>st</sup> 25%	34.2	41.8	43.9	41.0
2 <sup>nd</sup> 25 %	23.6	17.8	15.3	18.8
Median	1.1	2.5	1.4	3.3
3 <sup>ra</sup> 25%	17.5	20.8	28.7	20.4
4''' 25%	23.7	17.1	10.7	16.5

# Table 2a - Summary Statistics

	2002	2003	2004
	NIP		
Minimum value	-164.70	-248.75	-232.80
First quartile	-12.03	-6.46	-0.68
Median	22.70	27.58	40.63
Third quartile	65.30	70.74	66.75
Maximum value	193.81	332.19	171.67
Range	358.51	580.94	404.47
Interquartile Range	77.33	77.20	67.42
Mean	21.94	31.33	22.23
Std. deviation	73.77	107.32	81.08
	NIP - excluding o	outliers	
Minimum value	-107.54	-41.80	-54.60
First quartile	-0.51	-0.74	-0.32
Median	22.69	39.53	45.29
Third quartile	61.18	68.36	66.52
Maximum value	98.42	180.11	97.98
Range	205.96	221.90	152.58
Interquartile Range	61.68	69.10	66.83
Mean	22.64	39.00	33.78
Std. deviation	52.60	52.72	45.22
Outliers	17, 18	17, 26, 35	17, 18, 26
	Sectors in each q	juartile	
1 <sup>st</sup> 25%	17, 26, 34, 36, 16	27, 26, 36, 28, 15	17, 26, 36, 28, 15
2 <sup>nd</sup> 25 %	15, 25, 27, 20, 28, 22	16, 25, 37, 20, 22, 34	16, 25, 37, 22, 20, 34
Median	19	19	19
3rd 25%	27 31 21 35	31 27 32 21	27 35 31 21
5 25%	32, 29	29, 23	32, 29
4 <sup>th</sup> 25%	23, 24, 33, 30, 18	24, 33, 30, 18, 35	23, 24, 33, 30, 18
Employm	ent shares of sector	rs in each auartile	
1 <sup>st</sup> 25%	33.63	48.42	47.17
2 <sup>nd</sup> 25 %	28.73	13.68	14.19
Median	1.96	1.90	1.92
3 <sup>rd</sup> 25%	15.43	14.81	16.04
4 <sup>th</sup> 25%	20.25	21.20	20.69

## Table 2b - Summary Statistics

		NIP (%)	NIP (%)	Initial	Terminal	Initial	Terminal			
		1983-	1989-	actual	level of	Employment	Employment			
		1984	1990	employment	employment	as % of	as % of			
	Industry			(000)	(000)	total	total	$\Delta L_M$	$\Delta L$	
Sectors with a comparative disadvantage - Comparative disadvantage deepened over time										
314	Tobacco	9.5	43.3	4.5	5.5	0.8	0.8	3.3	0.9	nontraditional (converging)
323	Leather & products	0	20	5.9	5.9	1.1	0.9	1.5	-0.1	traditional
341	Paper & products	23.4	26.8	7.3	9.9	1.3	1.5	0.5	2.6	traditional
390	Other manufacturing products	24	33.2	4.8	4.7	0.9	0.7	0.7	-0.1	traditional
	Sectors with a co	omparative	disadvanta	ige - Comparc	ative disadvar	itage decreas	ed over time			
351	Industrial chemicals	66.9	51.2	13.8	15.8	2.5	2.4	-5.1	2.0	nontraditional (converging)
352	Other chemical products	11.7	8.5	20.2	26.1	3.6	3.9	-0.9	5.9	nontraditional (converging)
371	Iron & steel	19	0	19.6	27.7	3.5	4.1	-5.2	8.1	traditional
372	Non-ferrous metals	32.3	21.7	8.5	10.1	1.5	1.5	-1.4	1.5	traditional
381	Metal fabricated products	26.7	10.5	40.8	41.3	7.3	6.1	-7.5	0.5	traditional
382	Machinery	61.5	53.4	38.5	42.0	6.9	6.3	-7.3	3.5	traditional
383	Electrical machinery apparatus etc.	37.1	29.1	32.0	44.2	5.8	6.6	-5.0	12.2	traditional
384	Transport equipment	35.9	20.9	37.6	46.4	6.8	6.9	-8.8	8.8	traditional
385	Professional goods	94.3	84.7	1.2	2.6	0.2	0.4	-1.6	1.3	traditional
	Sectors with	h a compar	ative adva	ntage – Comp	arative advan	itage decreas	ed over time			
313	Beverages	-3.3	-3.2	7.2	9.0	1.3	1.3	0.0	1.8	nontraditional (converging)
311	Food	-10.2	-2.8	61.6	72.3	11.1	10.8	5.2	10.7	traditional
321	Textile	-51.8	-39.8	151.8	175.9	27.3	26.2	15.1	24.1	traditional
355	Rubber products <sup>+</sup>	-6.3	2.3	11.1	13.5	2	0.2	1.2	2.4	traditional
356	Plastic products <sup>+</sup>	-1	4.4	12.7	16	2.4	0.5	0.9	3.3	traditional
361	Pottery, china, etc.	-3.2	-0.9	7.9	9.9	1.4	1.5	0.2	2.0	traditional
362	Glass & products	-49.7	-21.9	12.7	14.6	2.3	2.2	3.3	1.9	traditional
311	Other food products <sup>†</sup>	-63.4	5.4	10.3	16.6	1.8	2.5	12.1	6.3	nontraditional (diverging)
331	Wood products & cork <sup>t</sup>	-50.4	1.4	7.8	9.2	1.4	1.4	4.8	1.3	nontraditional (diverging)
332	Furniture and fixtures	-168.2	-5.4	4.4	5.3	0.8	0.8	8.2	0.9	nontraditional (diverging)
369	Non-metallic mineral products <sup>+</sup>	-1.4	4.9	30.9	43.2	6.4	5.1	2.9	12.3	nontraditional (diverging)
	Sectors v	vith compar	rative advo	antage - Com	parative adva	ntage increas	ed over time			
324	Footwear	-12.6	-27.2	3.3	3.3	0.6	0.5	-0.4	0.4	nontraditional (converging)

 Table 3a - Impact of net import penetration on sectoral employment (1983-1984 to 1989-1990)

**†** Sector switched from an advantaged to a disadvantaged position

		NIP (%)	NIP (%)	Initial	Terminal	Initial	Terminal			
		1989-	1994-	actual	level of	Employment	Employment			
		1990	1995	employment	employment	as % of	as % of			
	Industry			(000)	(000)	total	total	$\Delta L_M$	$\Delta L$	
	Sectors with a	comparative	disadvant	age – Compar	ative disadva	ntage deepen	ed over time			
356	Plastic products	4.4	5.8	16.0	17.9	2.4	2.7	0.3	1.9	nontraditional (converging)
382	Machinery	53.4	55.2	42.0	38.7	6.3	5.9	1.6	-3.3	nontraditional (converging)
390	Other manufacturing products	33.2	36.6	4.7	5.0	0.7	0.8	0.3	0.3	nontraditional (converging)
323	Leather & products	20	31.4	5.9	5.7	0.9	0.9	1.0	-0.2	traditional
331	Wood Products & cork	1.4	2.6	9.2	8.8	1.4	1.3	0.1	-0.4	traditional
352	Other chemical products	8.5	16.8	26.1	25.4	3.9	3.9	2.5	-0.6	traditional
381	Metal fabricated products	10.5	10.7	41.3	39.0	6.1	6.0	0.1	-2.3	traditional
341	Paper & products	26.8	28.8	9.9	11.7	1.5	1.8	0.3	1.8	nontraditional (diverging)
351	Industrial chemicals	51.2	61.7	15.8	11.0	2.4	1.7	3.0	-4.9	nontraditional (diverging)
372	Non-ferrous metals	21.7	30.4	10.1	6.5	1.5	1.0	0.8	-3.5	nontraditional (diverging)
	Sectors with a c	omparative	disadvanta	ige - Comparc	ative disadvar	itage decreas	ed over time			
312	Other food products <sup>tt</sup>	5.4	-27	16.6	15.2	2.5	2.3	-3.9	-1.4	traditional
314	Tobacco <sup>++</sup>	43.3	-11.4	5.5	4.8	0.8	0.7	-2.3	-0.7	traditional
355	Rubber products <sup>tt</sup>	2.3	-3.7	13.5	11.1	2	1.7	-0.6	-2.4	traditional
369	Non-metallic mineral products <sup>++</sup>	4.9	-4.8	38.7	38.8	6.4	5.9	-3.6	-4.5	traditional
371	Iron & steel <sup>tt</sup>	0	-4.9	25.3	22	4.1	3.9	-1.2	-2.4	traditional
383	Electrical machinery apparatus etc.	29.1	28	44.2	39.5	6.6	6.1	-0.6	-4.7	traditional
384	Transport equipment	20.9	20.5	46.4	53.0	6.9	8.1	-0.3	6.5	traditional
385	Professional goods	84.7	83.1	2.6	3.1	0.4	0.5	-0.3	0.5	traditional
	Sectors wit	th a compar	ative adva	ntage – Comp	arative advan	itage decreas	ed over time			
321	Textile	-39.8	-35	175.9	175.8	26.2	27.0	6.3	-0.1	traditional
332	Furniture and fixtures <sup>†</sup>	-5.4	1.5	5.3	7.7	0.0	1.2	0.5	2.4	traditional
362	Glass & products	-21.9	-14.8	14.6	10.4	2.2	1.6	0.6	-4.2	nontraditional (diverging)
	Sectors	with compa	rative advo	antage - Comj	parative adva	ntage increas	ed over time			
324	Footwear	-27.2	-41.1	3.6	5.3	0.5	0.8	-0.5	1.6	nontraditional (converging)
311	Food	-2.8	-5.2	72.3	74.6	10.8	11.5	-1.7	2.3	traditional
313	Beverages	-3.2	-4.6	9.0	7.0	1.3	1.1	-0.1	-2.1	traditional
361	Pottery, china, etc.	-0.9	-4.3	9.9	9.9	1.5	1.5	-0.3	0.0	traditional

Table 3b - Impact of net import penetration on sectoral employment (1989-1990 to 1994-1995)

**†** Sector switched from an advantaged to a disadvantaged position

**††** Sector switched from a disadvantaged to an advantaged position

		NIP (%)	NIP (%)	Initial	Terminal	Initial	Terminal			
		1994-	1999-	actual	level of	Employment	Employment			
		1995	2000	employment	employment	as % of	as % of			
	Industry			(000)	(000)	total	total	$\Delta L_M$	$\Delta L$	
	Sectors with a	comparative	disadvant	age – Compar	ative disadva	ntage deepen	ed over time			
332	Furniture and fixtures	1.5	3.8	7.7	15.1	1.2	1.7	0.4	7.4	nontraditional (converging)
382	Machinery	55.2	62.9	38.7	46.7	5.9	5.4	9.8	8.0	nontraditional (converging)
383	Electrical machinery apparatus etc.	28	44.4	39.5	59.5	6.1	6.8	17.6	20.1	nontraditional (converging)
384	Transport equipment	20.5	31.1	53.0	61.3	8.1	7.0	9.5	8.3	nontraditional (converging)
331	Wood Products & cork	2.6	14.9	8.8	11.2	1.3	1.3	1.6	2.4	traditional
341	Paper & products	28.8	43.4	11.7	12.8	1.8	1.5	3.3	1.1	traditional
351	Industrial chemicals	61.7	69.5	11.0	10.7	1.7	1.2	2.8	-0.2	traditional
352	Other chemical products	16.8	29.8	25.4	34.3	3.9	3.9	6.3	8.9	traditional
372	Non-ferrous metals	30.4	35.7	6.5	9.2	1.0	1.1	0.8	2.7	traditional
381	Metal fabricated products	10.7	12.3	39.0	58.4	6.0	6.7	1.0	19.4	traditional
	Sectors with a c	omparative	disadvanta	ige - Comparc	ative disadvar	itage decreas	ed over time			
323	Leather & products	31.4	23.8	5.7	5.9	0.9	0.7	-0.6	0.2	traditional
385	Professional goods	83.1	75.5	3.1	4.7	0.5	0.5	-1.5	1.6	traditional
390	Other manufacturing products	36.6	35.6	5.0	6.1	0.8	0.7	-0.1	1.1	traditional
	Sectors wit	th a compar	ative adva	ntage – Comp	arative advar	itage decreas	ed over time			
311	Food	-5.2	-5	74.6	90.5	11.5	10.4	0.1	15.9	nontraditional (diverging)
313	Beverages	-4.6	-2.1	7.0	6.9	1.1	0.8	0.2	0.0	nontraditional (diverging)
324	Footwear <sup>t</sup>	-41.1	0.9	5.3	7.8	0.8	0.9	3.3	2.5	traditional
355	Rubber products <sup>+</sup>	-3.7	8	11.1	12.1	1.7	1.4	1.5	1	traditional
371	Iron & steel <sup>+</sup>	-4.9	7.7	25.3	31.4	3.9	3.6	4.3	6.1	traditional
	Sectors	with compar	rative advo	antage - Comj	parative adva	ntage increas	ed over time			
314	Tobacco	-11.4	-21.3	4.8	4.9	0.7	0.6	-0.4	0.2	traditional
321	Textile	-35	-50.3	175.8	260.3	27.0	29.9	-26.6	84.5	traditional
361	Pottery, china, etc.	-4.3	-10.9	9.9	10.5	1.5	1.2	-0.6	0.6	traditional
362	Glass & products	-14.8	-17.4	10.4	13.6	1.6	1.6	-0.3	3.2	traditional
369	Non-metallic mineral products	-4.8	-11.4	38.7	49.5	5.9	5.7	-2.9	10.8	traditional
312	Other food products	-27	-29.2	15.2	18.2	2.3	2.1	-0.3	2.9	nontraditional (diverging)

 Table 3c - Impact of net import penetration on sectoral employment (1994-1995 to 1999-2000)

**†** Sector switched from an advantaged to a disadvantaged position

## Table 3d - Impact of net import penetration on sectoral employment (2002-2003)

		NIP (%)	NIP (%)	Initial	Initial			
		2002	2003	actual	Employment			
				employment	as % of	_		
	Industry			(000)	total	$\Delta L_{M}$	$\Delta L$	
	Sectors with a comparative disadvo	antage - Coi	nparative	disadvantage	deepened ove	r time		
35	Other transport equipment	55.4	332.2	19.5	0.9	-25.7	2.1	nontraditional (converging)
19	Leather and leather products	22.7	27.6	41.9	2.0	2.8	-0.4	traditional
20	Wood and wood products	10.6	20.9	57.3	2.7	6.8	-4.7	traditional
21	Pulp, paper and paper products	52.9	61.4	36.3	1.7	6.6	-6.1	traditional
22	Publishing, printing & reproduction of recorded media	16.6	21.3	44.0	2.1	2.6	0.2	traditional
23	Coke, refined petroleum products and nuclear fuel	68	70.7	6.2	0.3	0.6	0.1	traditional
27	Basic metals	44.8	54.8	72.4	3.4	16.3	1.0	traditional
29	Machinery & equipment n.e.c.	65.3	66	135.5	6.3	2.9	9.6	traditional
31	Electrical machinery & apparatus	45.8	51.5	48.5	2.3	5.7	0.5	traditional
	Sectors with a comparative disadva	ntage – Con	nparative o	lisadvantage	decreased ove	er time		
18	Wearing apparel, dressing & dying of fur	193.8	180.1	333.3	15.6	59.9	16.6	traditional
24	Chemical and chemical products	72.2	71.8	80.8	3.8	-1.1	-1.8	traditional
32	Radio, television, and communication equipment	61.2	60.5	17.1	0.8	-0.3	2.5	traditional
33	Medical, precision and optical instruments, watches	89.7	87.3	11.7	0.5	-2.2	0.3	traditional
30	Office machinery and computers	98.4	97.5	0.3	0.0	-0.2	0.3	nontraditional (diverging)
	Sectors with a comparative adva	ntage – Con	nparative d	idvantage dec	creased over t	time		
16	Tobacco products	-12.6	-6.5	15.7	0.7	1.3	6.5	nontraditional (diverging)
	Sectors with comparative advar	ntage - Com	parative a	dvantage incr	eased over til	ne		
15	Food products and beverages	-12	-25.7	302.2	14.2	-30.0	-25.9	traditional
17	Textiles	-164.7	-248.7	400.1	18.7	-96.3	-0.6	traditional
25	Rubber and plastic products	-0.5	-1.5	81.7	3.8	-0.9	13.0	traditional
26	Other non-metallic mineral products	-107.5	-143.1	117.6	5.5	-16.9	-2.1	traditional
36	Furniture, manufacturing n.e.c.	-25	-41.8	116.2	5.4	-15.9	18.2	traditional

		NIP (%)	NIP (%)	Initial	Initial			
		2003	2004	actual	Employment			
				employment	as % of			
	Industry			(000)	total	$\Delta L_{M}$	$\Delta L$	
	Sectors with a comparative disadvo	antage - Co	mparative	disadvantage	deepened over	r time		
34	Transport equipment	22.4	39.5	84.7	3.9	28.7	16.9	nontraditional (converging)
19	Leather and leather products	27.6	40.6	41.5	1.9	10.1	4.6	traditional
20	Wood and wood products	20.9	30.9	52.6	2.4	8.6	6.9	traditional
21	Pulp, paper and paper products	61.4	62.2	30.2	1.4	0.8	4.2	traditional
23	Coke, refined petroleum products and nuclear fuel	70.7	71.1	6.2	0.3	0.1	0.1	traditional
24	Chemical and chemical products	71.8	75.3	79.0	3.6	11.8	4.6	traditional
29	Machinery & equipment n.e.c.	66	66.7	145.1	6.6	3.8	21.0	traditional
31	Electrical machinery & apparatus	51.5	59.3	49.0	2.2	10.4	4.9	traditional
32	Radio, television, and communication equipment	60.5	66.3	19.5	0.9	4.0	3.7	traditional
33	Medical, precision and optical instruments, watches	87.3	90.2	12.0	0.5	3.9	1.8	traditional
30	Office machinery and computers	97.5	98	0.6	0.0	0.1	0.0	nontraditional (diverging)
	Sectors with a comparative disadva	ntage - Cor	nparative	disadvantage	decreased ove	r time		
35	Other transport equipment	332.2	52.9	21.6	1.0	-157.3	4.9	nontraditional (converging)
18	Wearing apparel, dressing & dying of fur	180.1	171.7	349.9	16.0	46.2	42.7	traditional
22	Publishing, printing & reproduction of recorded media	21.3	18.6	44.2	2.0	-1.6	5.2	traditional
27	Basic metals	54.8	49.9	73.4	3.4	-7.9	7.7	traditional
	Sectors with a comparative adva	ntage - Cor	nparative (	advantage de	creased over t	ime		
17	Textiles	-248.7	-232.8	399.5	18.3	19.6	8.8	traditional
25	Rubber and plastic products	-1.5	-0.6	94.7	4.3	0.9	12.8	traditional
26	Other non-metallic mineral products	-143.1	-103.4	115.5	5.3	25.9	17.0	traditional
16	Tobacco products	-6.5	-0.7	22.2	1.0	1.3	0.2	nontraditional (diverging)
	Sectors with comparative advar	ntage - Com	parative a	idvantage incr	reased over tir	ne		
28	Fabricated metal products, except machinery	-38.3	-53.7	132.0	6.0	-15.6	22.9	nontraditional (converging)
15	Food products and beverages	-25.7	-36.3	276.3	12.6	-22.1	8.8	traditional
36	Furniture, manufacturing n.e.c.	-41.8	-54.6	134.5	6.2	-12.6	17.7	traditional

 Table 3e - Impact of net import penetration on sectoral employment (2003-2004)

	Industry	Ĺ	ĉ	Ŝ	- Â
311	Food	2.7	8.5	-1.2	-5.4
312	Other food products	8.3	21.3	-8.7	-2.8
313	Beverages	3.8	17.0	0.0	-15.3
314	Tobacco	3.2	15.8	-7.5	-4.6
321	Textile	2.5	8.5	-1.4	-5.3
323	Leather & products	-0.2	6.2	-3.6	-2.9
324	Footwear	1.7	7.5	2.0	-8.6
331	Wood Products & cork	2.7	18.8	-6.8	-9.8
332	Furniture and fixtures	3.1	33.3	-14.4	-15.4
341	Paper & products	5.2	12.2	-0.8	-7.3
351	Industrial chemicals	2.3	1.8	6.7	-7.4
352	Other chemical products	4.4	16.1	0.6	-14.4
355	Rubber products	3.3	9.7	-1.4	-5.7
356	Plastic products	3.9	12.9	-0.9	-9.1
361	Pottery, china, etc.	3.9	17.9	-0.4	-15.7
362	Glass & products	2.3	11.4	-3.4	-6.3
369	Non-metallic mineral products	5.7	10.6	-1.1	-4.2
371	Iron & steel	5.9	10.6	3.6	-9.7
372	Non-ferrous metals	2.8	7.8	2.5	-9.0
381	Metal fabricated products	0.2	4.5	3.4	-9.5
382	Machinery	1.4	4.5	3.2	-7.4
383	Electrical machinery apparatus etc.	5.5	8.1	2.0	-5.6
384	Transport equipment	3.6	6.4	3.6	-7.3
385	Professional goods	13.3	5.9	17.9	-12.0
390	Other manufacturing products	-0.3	3.2	-2.1	-1.7

Table 4a – Estimated impact of demand, import and labour productivity on manufacturing employment (1983-84 to1989-90)

	Industry	Ĺ	Ĉ	Ŝ	- Â
311	Food	0.6	8.0	0.5	-9.8
312	Other food products	-1.7	1.5	6.1	-12.3
313	Beverages	-5.0	11.6	0.3	-23.0
314	Tobacco	-2.8	-2.3	14.5	-18.9
321	Textile	0.0	11.0	-0.7	-13.0
323	Leather & products	-0.5	10.1	-3.0	-9.4
324	Footwear	7.7	7.8	2.1	-3.1
331	Wood Products & cork	-1.0	10.5	-0.2	-14.3
332	Furniture and fixtures	7.8	15.9	-1.4	-7.6
341	Paper & products	3.4	8.0	-0.6	-4.6
351	Industrial chemicals	-7.1	5.7	-4.7	-10.8
352	Other chemical products	-0.5	8.5	-1.9	-8.7
355	Rubber products	-3.9	6.4	1.2	-15.1
356	Plastic products	2.3	12.6	-0.3	-12.1
361	Pottery, china, etc.	0.1	9.2	0.7	-12.7
362	Glass & products	-6.6	5.7	-1.2	-14.8
369	Non-metallic mineral products	-2.2	6.8	2.0	-14.3
371	Iron & steel	-1.8	9.9	1.0	-16.7
372	Non-ferrous metals	-8.3	2.1	-2.3	-11.0
381	Metal fabricated products	-1.1	11.1	-0.1	-15.5
382	Machinery	-1.6	13.8	-0.8	-19.0
383	Electrical machinery apparatus etc.	-2.2	10.2	0.3	-16.7
384	Transport equipment	2.7	13.9	0.1	-14.6
385	Professional goods	3.7	12.3	2.0	-12.9
390	Other manufacturing products	1.1	1.3	-1.0	1.3

Table 4b – Estimated impact of demand, import and labour productivity on manufacturing employment (1989-90 to 1994-95)

	Industry	Ĺ	Ĉ	Ŝ	- Â
311	Food	3.9	1.9	0.0	1.9
312	Other food products	3.6	1.8	0.3	1.3
313	Beverages	-0.1	0.0	-0.5	0.5
314	Tobacco	0.7	1.8	1.7	-3.5
321	Textile	8.2	5.4	2.2	0.6
323	Leather & products	0.8	0.3	2.1	-1.5
324	Footwear	8.1	18.3	-6.8	-2.5
331	Wood Products & cork	5.0	13.4	-2.7	-5.0
332	Furniture and fixtures	14.3	23.3	-0.5	-7.4
341	Paper & products	1.8	4.0	-4.5	2.3
351	Industrial chemicals	-0.4	-0.4	-4.5	4.5
352	Other chemical products	6.2	4.5	-3.3	4.7
355	Rubber products	1.8	-4.7	-2.4	8.5
356	Plastic products	9.8	4.6	-1.4	5.7
361	Pottery, china, etc.	1.1	-8.8	1.2	8.7
362	Glass & products	5.6	5.3	0.5	-0.4
369	Non-metallic mineral products	5.0	6.7	1.2	-2.8
371	Iron & steel	4.4	4.3	-2.5	3.0
372	Non-ferrous metals	7.1	12.9	-1.6	-3.7
381	Metal fabricated products	8.4	12.0	-0.4	-3.0
382	Machinery	3.8	8.7	-3.7	-0.8
383	Electrical machinery apparatus etc.	8.6	19.9	-5.0	-4.8
384	Transport equipment	3.0	16.8	-2.8	-9.7
385	Professional goods	8.9	16.1	7.7	-15.8
390	Other manufacturing products	4.2	16.5	0.3	-11.1

Table 4c – Estimated impact of demand, import and labour productivity on manufacturing employment (1995-2000)

	Industry	Ĺ	ĉ	Ŝ	Â
15	Food products and beverages	-9.0	-35.5	11.5	-15.0
16	Tobacco products	34.9	-7.9	-5.6	-48.3
17	Textiles	-0.1	-45.6	27.6	-17.9
18	Wearing apparel, dressing & dying of fur	4.9	-	-	-16.3
19	Leather and leather products	-1.0	-16.0	-6.5	-21.5
20	Wood and wood products	-8.6	0.4	-12.2	-3.2
21	Pulp, paper and paper products	-18.5	-10.1	-19.8	-11.4
22	Publishing, printing & reproduction of recorded media	0.4	-29.7	-5.8	-35.8
23	Coke, refined petroleum products and nuclear fuel	1.3	-8.4	-8.9	-18.6
24	Chemical and chemical products	-2.3	3.8	1.4	7.5
25	Rubber and plastic products	14.8	6.6	1.0	-7.2
26	Other non-metalic mineral products	-1.8	-32.7	15.8	-15.0
27	Basic metals	1.3	36.1	-20.1	14.7
28	Fabricated metal products, except machinery	3.3	-44.7	46.5	-1.5
29	Machinery & equipment n.e.c.	6.8	-14.2	-2.0	-23.0
30	Office machinery and compouters	57.8	-3.3	44.3	-16.8
31	Electrical machinery & apparatus	1.0	-13.0	-11.1	-25.0
32	Radio, television, and communication equipment	13.6	12.5	1.7	0.7
33	Medical, precision and optical instruments, watches	2.1	-2.2	20.5	16.2
34	Transport equipment	21.3	143.8	-86.1	36.4
35	Other transport equipment	10.2	-	-	-23.6
36	Furniture, manufacturing n.e.c.	14.6	6.6	12.6	4.6
37	Recycling	5.7	-0.6	0.0	-6.2

Table 4d – Estimated impact of demand, import and labour productivity on manufacturing employment (2002-2003)

Industry		Ĺ	Ĉ	Ŝ	Â
15	Food products and beverages	3.1	-12.3	8.1	-7.4
16	Tobacco products	1.1	10.9	-5.6	4.2
17	Textiles	2.2	5.5	-4.7	-1.3
18	Wearing apparel, dressing & dying of fur	11.5	-	-	-19.2
19	Leather and leather products	10.5	10.7	-19.9	-19.6
20	Wood and wood products	12.4	24.1	-13.5	-1.7
21	Pulp, paper and paper products	12.9	13.5	-2.2	-1.7
22	Publishing, printing & reproduction of recorded media	11.0	7.3	3.3	-0.4
23	Coke, refined petroleum products and nuclear fuel	0.9	12.5	-1.3	10.3
24	Chemical and chemical products	5.6	11.9	-13.2	-6.9
25	Rubber and plastic products	12.7	10.1	-0.8	-3.4
26	Other non-metallic mineral products	13.8	41.5	-17.8	9.9
27	Basic metals	10.0	18.0	10.3	18.2
28	Fabricated metal products, except machinery	16.0	7.5	10.6	2.1
29	Machinery & equipment n.e.c.	13.5	11.0	-2.3	-4.8
30	Office machinery and computers	6.9	24.7	-19.3	-1.5
31	Electrical machinery & apparatus	9.6	40.1	-17.6	12.9
32	Radio, television, and communication equipment	17.3	19.7	-15.9	-13.5
33	Medical, precision and optical instruments, watches	14.1	20.1	-25.2	-19.3
34	Transport equipment	18.2	48.2	-24.8	5.1
35	Other transport equipment	20.5	-	-	-5.0
36	Furniture, manufacturing n.e.c.	12.4	0.1	8.6	-3.6
37	Recycling	13.0	59.0	0.0	46.1

 Table 4e – Estimated impact of demand, import and labour productivity on manufacturing employment (2003-2004)

Table A1. Changes in NIP Values and Their Impact on Employment

Comparative Advantage	Change Over Time	Impact on employment	
$NIP_t < 0 \& NIP_{t+n} < 0$	$NIP_{t+n} > NIP_t$	$L_{t+n}^* > L_{t+n}$	The sector has a comparative advantage, but it has decreased within the time period examined. The level of employment would be higher than what is observed if there were no change in import penetration.
$NIP_t < 0 \& NIP_{t+n} < 0$	$NIP_{t+n} < NIP_t$	$L_{t+n}^* < L_{t+n}$	The sector has a comparative advantage, and got even stronger within the time period examined. The level of employment would be lower than what is observed if there were no change in import penetration.
$NIP_{t} > 0 \& NIP_{t+n} > 0$	$NIP_{t+n} > NIP_t$	$L_{t+n}^* > L_{t+n}$	The sector has a comparative disadvantage and it has deepened during the period examined. The level of employment would be higher than what is observed if there were no change in import penetration.
$NIP_{t} > 0 \& NIP_{t+n} > 0$	$NIP_{t+n} < NIP_t$	$L_{t+n}^* < L_{t+n}$	The sector has a comparative disadvantage but it has decreased within the time period examined. The level of employment would be lower than what is observed if there were no change in import penetration.