Protectionism, free trade and preferential trade: the Mexican experience 1970-2005 [*]

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1. Introduction

The Heckscher-Ohlin theorem, based on a general equilibrium model, together with the purchasing power parity doctrine are considered the two pillars of the neoclassical theory of international trade (Krueger 1983), despite strong criticism from both the theoretical and empirical perspectives.[1] The neoclassical theory of trade claims that free trade and exchange rate flexibility are means for achieving trade balance and Pareto optima in production and consumption. These ideas belong to *mainstream economics*, which has been taught as the leading economic paradigm in graduate schools of economics, political economy and other social disciplines at all the major universities around the world for the last four or five decades. In contrast, active trade policies (protectionism) and fixed or regulated exchange rates prevailed in most countries – whether developed or underdeveloped – for most of the twentieth century. It was in the late Seventies and

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[1] Some of the most relevant criticisms of the H-O theorem from a neoricardian perspective are those by Parrinello (1970), Metcalfe and Steedman (1972) and Steedman (1979).

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early Eighties when liberalism started to prevail in economic policy both domestically, by reducing government expenses and regulation, and internationally, by reducing tariffs and eliminating non-tariff barriers to trade in goods and services, and in capital flows.

However, the neo-liberal policies have had mixed economic results. While checking inflation and reducing fiscal deficits, they failed to produce economic growth, full employment or, in some cases, even balanced trade. This particularly affected the underdeveloped countries, which had suffered from a lack of economic growth, widespread unemployment, growing poverty and social inequality since long before these policies were applied by their governments. Their situation seems to have worsened rather than improved with the application of liberal policies in the last twenty years.

In Mexico, in the middle of the recession resulting from the 1982 foreign debt and foreign exchange crises, the government initiated a process of trade liberalization as part of a set of liberal policies aimed at reducing state intervention in the economy. After forty years as a tightly closed economy, the Mexican economy began to open up as a result of free market policies. The process, which was gradual in the beginning, accelerated in the mid-1980s when Mexico joined GATT, and peaked when Mexico joined the North American Free Trade Agreement (NAFTA) in 1994.

The package of liberal measures was promoted in Mexico and in other developing countries by the US government, the World Bank and the International Monetary Fund (Sachs 1988, p. 77).[2] The same type of reforms were also applied in certain Latin American countries in the Eighties and the Nineties, under the assumption that mere deregulation constituted the *structural change* needed to correct a distorted economy and increase the level of employment and wages (Weller 2000, p. 13). These liberal policies, based on exports, were recommended as a new strategy both for recovery and for growth (Sachs 1988). The set of policies were in line with the "Washington Consensus" (Moreno-Brid, Pérez Caldentey and Ruiz-Nápoles 2004-05).

This change in development strategy in favour of trade liberalization and state downsizing stands as the most significant event in

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[2] It is widely known, though, that there were also Mexico's strong political forces working internally in favour of this type of policies for some time before they were actually set in motion.

Mexico's economic history in the last five decades. NAFTA is also recognized as a major cause of the spike in exports and foreign direct investment (FDI) that occurred in Mexico. The effects of NAFTA after ten years in operation have been thoroughly studied by experts, with both favourable and unfavourable evaluations from the Mexican perspective (see, for example, Blecker 2006; Moreno-Brid, Ruiz-Nápoles and Rivas-Valdivia 2005; Puyana and Romero 2005; Romalis 2005; Casares and Sobarzo 2004; Weintraub 2004).

Some authors have interpreted NAFTA's role in Mexico as a corollary of the Washington Consensus' set of liberalization, deregulation and privatization measures that were adopted by the Mexican government (Blecker 2006). This is not necessarily the case since, while unrestricted, unilateral free trade has been part of trade liberalization policies in most of Latin America, a three-country preferential trade area like NAFTA has different operating rules, with different effects on the trading partners.

When looking at the various trade policies in perspective, one may reasonably ask how much they have helped the Mexican economy, considering three different policy phases: protected trade, unilateral trade and preferential trade agreements, such as NAFTA. Thus, some of the questions that may arise are: what were the economic and political aims of the liberal policies, and of NAFTA, for Mexico? And to what extent have these aims been achieved? What – if anything – went wrong with the various liberal policies is something we need to know.

In this paper I set out to address some of these questions by analyzing the performance of the Mexican economy over three successive periods during the last 35 years: protected trade (1970-81), unilateral free trade (1982-93) and the preferential trade agreement, NAFTA, (1994-2005).[3]

After this introduction, in the – brief – second section, I point up some critical aspects of the alleged free trade benefits to the economy as contemplated in conventional theory. The third – more extensive – section illustrates the relevant aspects of the Mexican liberal strategy and its overall results; I present selected data on the Mexican economy relating a key variable, exports, with three other im-

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[3] Notice that protectionist policies were in effect in Mexico for about forty years, from the late Forties to the mid-Eighties.

portant aggregate variables: product, employment and imports. In the fourth section I analyze the results of economic liberalism in Mexico in terms of enhancing equality, while the fifth section deals with some contradictory results of the so called 'structural change'.

2. Economic benefits from free trade

When reviewing some of the most famous long-established and recent textbooks regarding conventional trade theory and policy (for example: Södernsten 1970, Heller 1973, Kindleberger 1973, Markusen *et al.* 1995, Krugman and Obstfeld 2005) I observe that it is not frequently made explicit that, to get all the benefits deriving from free trade, a country's economy must already have full employment and equilibrium *prior* to engaging in trade. To be precise, from a general equilibrium perspective, all the points on Samuelson's production possibilities frontier (Samuelson 1949) are but full employment general equilibrium points. By moving along this curve a country does not increase the level of production and/or employment of productive factors, but only reallocates them; what is improved by free trade is the country's consumption. But the efficiency gains of free trade in overall consumption cannot be measured without a community indifference map, whose very existence has been under debate (Kaldor 1939, Arrow and Scitovsky 1969).

From a partial equilibrium viewpoint the welfare benefits of reducing tariffs are but a redistribution of pre-existing welfare, from the local government and producers to importers (Corden 1974), be they high income consumers or producers. These welfare benefits can, however, be offset by currency depreciation that operates in favour of exporters. In any case, the welfare gains depend on the price-elasticity of demand in each market, which cannot be predicted – a problem that was known as the "elasticity puzzle".[4]

The *efficiency* gains in production arise from the partial specialization of the economy in those areas of production where it has comparative advantages deriving from its relative factor endowment

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[4] Formalized as the "Marshall-Lerner-Robinson Condition" (see Kindleberger 1973, pp. 328-29).

(Ohlin 1933), but these advantages must show up in terms of relative prices. In other words, production will shift from sector A to sector B only when the price ratio of B to A rises; that is, line of production B becomes attractive enough for producers that want to switch over. No matter how we compare local relative prices to foreign ones, the price of the comparative-advantage local good must be low relative to its foreign equivalent good, but it must rise when trade opens up, to a point between the foreign price and the local one (Kindleberger 1973). And, according to the "law of one price", it will become equal for all trading countries when measured in a common currency, assuming no transportation costs. If this process is generalized to all tradable goods (exportable and importable), the expected result is that the ratio of the price of abundant factor-intensive goods over the price of scarce factor-intensive goods in the local economy must rise (Samuelson 1949), and this means that its terms of trade will increase unless local currency depreciation offsets these price changes. Still, production efficiency gains and partial specialization do not signify growth or an increase in employment.

The rationale for the *second best* policies – as protectionist policies are called – has been that theories based on full employment, perfect competition within and among countries, fully developed sectors and availability of resources, among other things, simply do not apply to the existing economies. On the contrary, market distortions like unbreakable oligopolies, income distribution disparities, factor prices not reflecting factor scarcities and gaps in technology are generally prevalent (Corden 1974, Krugman 1979 and 1981), and they do not look likely disappear because of freer trade. In other cases, the theoretical first best policy is politically or institutionally impossible to apply (Kindleberger 1973, p. 200).

The effects of trade liberalization on resource utilization in the absence of full employment were analyzed by certain non-neoclassical authors like Joan Robinson (1946-47) and Michal Kalecki (1946). In fact, the Keynesian argument has it that economic growth and full employment can be achieved with market expansion brought about by exports (Cornwall 1977, ch. 7; Davidson 1997). However, the argument is subject to the decline of the income-elasticity of imports, according to Thirlwall's law (Thirlwall 1979).

According to recent experiences, successful export-led growth strategies have not implied free trade policies and deregulation but,

quite the opposite, namely active industrial and trade state policies (Sachs 1988, Rodrik 1995). The history of international trade in capitalist economies and their trade policies shows that no country in the world has committed itself to free trade on a permanent basis. Instead, a wide range of protectionist policies have been followed by today's developed countries like the US and European countries for many years as strategies for growth and development (Chang 2002).

3. Exports led growth with free trade policies in Mexico

In the early Eighties, some experts in Mexico thought that manufacturing exports would become the engine for growth in the rest of the economy, and especially for increase in employment. This, however, called for changes in the foreign exchange and foreign trade policies in line with the aforementioned mainstream neo-liberal theories (see Levy 1981, Clavijo and Valdivieso 1983). One of the main reasons justifying the abandonment of protectionism was that it was producing a bias against exports (Lustig 1992).

Trade policy was changed so that exporters could import low-cost, high-quality intermediate goods (inputs) in order to use the relatively cheap local labour to produce manufacturing goods for export at a competitive level. However, such a strategy required investment from abroad, and there were still obstacles to this at the end of the Eighties.

The wage differential between Mexico and the US in manufacturing, along with their geographical proximity, has always been an attraction for foreign firms. Nonetheless, foreign investment was strictly limited and regulated up to the Eighties, thus failing to represent an important share of total installed investment in Mexico. Therefore, the opening process could not be completed until the late Eighties or the early Nineties, when financial opening took place in Mexico with the help of a boom in capital investment in emerging markets around the world. In effect, the liberalization of finance and investment in Mexico completed the process of trade liberalization and stimulated export-oriented manufacturing production.

However, at the end of the Eighties unilateral free trade was not producing the desired results. The clear failure of the neo-liberal economic policies led to a nationwide public distrust in those policies by

1988. Thus, once the ruling party managed to win the presidential election, thereby holding on to political power, it was a declared goal of the new administration to enhance liberal reforms and politically lock up the process through a free trade agreement with the US. This took the form of a preferential trade agreement including Canada which was signed in 1993 and which took effect in 1994. I am, of course, referring to the NAFTA.

Thus, in the last 35 years Mexico has experienced three different trade policies in three subsequent periods: protected trade (1970-81), unilateral free trade (1982-93) and preferential trade, NAFTA, (1994-2005). The results have also proved different.

TABLE 1A

MEXICO
GROSS DOMESTIC PRODUCT, EXPORTS INVESTMENT AND PRICES
(Average annual rates of growth in per cent)

	1970-81	1982-93	1994-2005
GDP in constant pesos	6.9	1.6	2.9
Population	2.6	2.6	1.4
GDP real per capita	4.1	−0.9	1.5
Exports (constant 1980 pesos)	15.6	6.1	8.2
Oil exports	225.7	2.2	2.5
Manufacturing exports	4.0	15.1	11.8
Maquiladoras ($)	27.2	18.2	13.6
Gross fixed investment	9.3	0.2	4.6
Consumer prices*	196.0	710.8	163.6
Terms of trade (US $)*	28.3	−64.1	20.4
Real exchange rate index*	30.3	5.3	1.6
Exchange rate (Mex/US)*	78.3	696.7	155.1

* Accumulated variation
Sources: Instituto Nacional de Estadística, Geografía e Informática and Banco de México.

Table 1A shows the economic performance of the Mexican economy through selected indicators. According to these indicators, it is clear that the protected trade period (1970-81) was better for the economy than the unilateral free trade period (1982-93). Much of what was expected from trade liberalization in terms of investment, growth and inflation reduction[5] did not occur, but only an increase

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[5] An improvement in the terms of trade should also be expected under free trade, given that for each country to engage in trade its import good must be cheaper relative to its export good through trade than produced at home (see Kindleberger 1974, pp. 44-45). Such was not the case in Mexico in the free trade period.

of manufacturing and *maquiladora*[6] exports. The neo-liberal policy package applied thus far failed to achieve such purposes. In contrast, economic performance improved during the NAFTA period. In some specific sectors the effects were quite dramatic, with the manufacturing and *maquiladora* export boom (especially in the first half of the last period), reduction in the inflation rate and, consequently, in the currency depreciation rate, and an improvement in the terms of trade. Nevertheless, the GDP growth rate, and in particular the *per capita* GDP, during the NAFTA period proved lower than in the first period, and indeed below the growth rate needed to absorb the growing work force. Part of the exports boom in the second half of the last period was due to oil exports, which benefited from increases in global prices. Employment also increased more in the protected trade period than in the free trade period and the NAFTA period.

TABLE 1B

LATIN AMERICA
GDP, EXPORTS, INVESTMENT AND PRICES
(Average annual rates of growth in per cent)

|	1970-81	1982-93	1994-2005
GDP in constant dollars	5.1	2.0	2.8
Population	2.4	2.0	1.6
GDP real per capita	2.7	0.0	1.1
Total exports (US $)	20.7	4.2	7.9
Gross fixed investment	6.7	0.1	3.2
Consumer prices*	475.7	4,868.4	248.0
Terms of trade (US $)*	15.7	−12.2	30.3

* Accumulated variation
Sources: ECLAC and United Nations.

Table 1B sets out some indicators for Latin America by way of comparison with the Mexican economy's performance, since this is the region to which Mexico belongs. We can observe that the protected period 1970-81 was also much better for Latin America than the free trade period in each and every single indicator.

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[6] *Maquiladora* is a Spanish name for the programme launched in Mexico in the mid-Sixties. It refers to commodities assembled in Mexico with parts produced elsewhere and sold abroad.

FIGURE 1

REAL GDP AND EXPORTS
(Annual rates of growth)
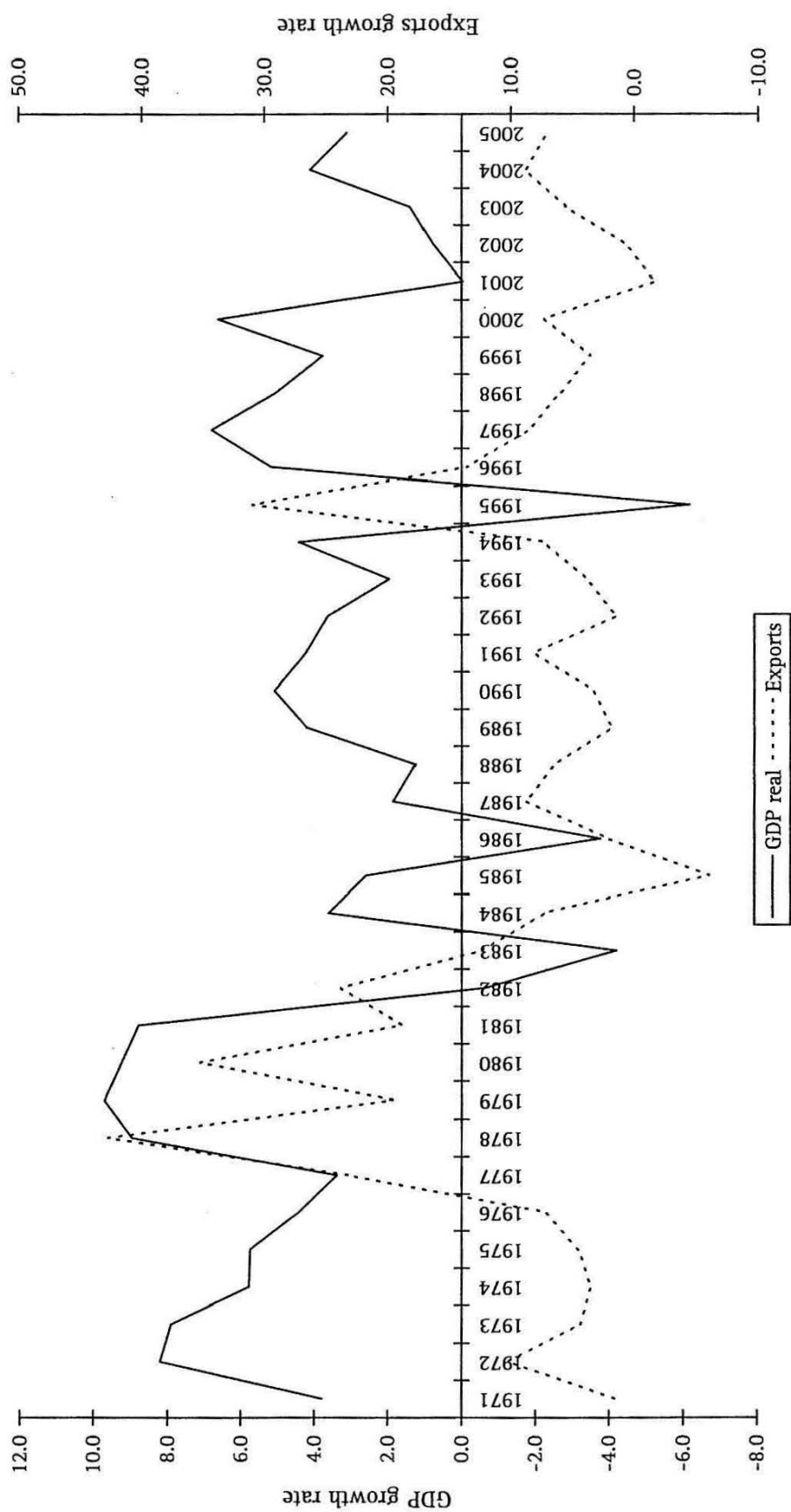
Sources: own elaboration with data from Instituto Nacional de Estadística, Geografía e Informática and Banco de México.

3.1. *Exports and growth*

Figure 1 shows the trends in GDP and manufacturing exports growth rates in constant 1980s pesos for the entire period 1970-2005. It is striking to observe that there seems to be no *correlation* between these two variables during the late Seventies, the Eighties and part of the Nineties. In fact, if we consider the 1982 to 1997 period, we even find a negative correlation. For example, whenever there is a low or negative GDP growth rate, the growth rate in manufacturing exports is positive and high. This can be explained by the fact that reductions in GDP growth were brought about to a large extent by the adjustment programmes put into effect by the government in 1982-83, 1986 and 1995, which included government spending cuts, currency depreciations, domestic credit restrictions and real wage reductions. All of this affected domestic consumption and investment but stimulated manufacturing exports. This negative relationship between exports and output can also be explained by the fact that, until the early 1990s, most production was oriented towards the domestic market; only residual production was exported, with the exception of oil and *maquiladora* products. This situation changed in the NAFTA period during which, with the exception of 1995, export and output growth began to correlate.

The increase in exports in the first half of the last period is, undoubtedly, the result of an increasing US demand for imports, and also of the increased access to the US market as a result of NAFTA. An important factor in the liberalization process was that, as from 1992, the Mexican economy opened up its capital account so that, along with Mexican capital flights, foreign investment of all types started to flow in and out of the country without regulation. Some of the foreign direct investment probably matured around 1994 and some plants started to operate – both export-oriented and assembly plants (*maquiladoras*).

The data in table 2 indicate a dramatic change in the composition of exports. The Mexican economy switched from commodities and oil exporting in the Seventies to manufacture exports in the Nineties. In other words, one of the aims of free trade policies seems to have been accomplished: *structural* change.

In table 3, the structure of aggregate demand shows that the export boom occurred in the NAFTA period, in which the exports of goods and services represented 27% of total demand, more than doubling its share in 1993, the final year of the unilateral free trade peri-

TABLE 2

MEXICAN EXPORTS STRUCTURE
(percentages)

	1970	1981	1993	2005
Total (FOB)	100.0	100.0	100.0	100.0
Oil products	2.5	62.5	14.8	14.9
Manufacturing	33.0	14.4	37.1	36.4
Maquiladoras	17.6	13.8	42.1	45.3
Other primary	46.9	9.3	6.0	3.4

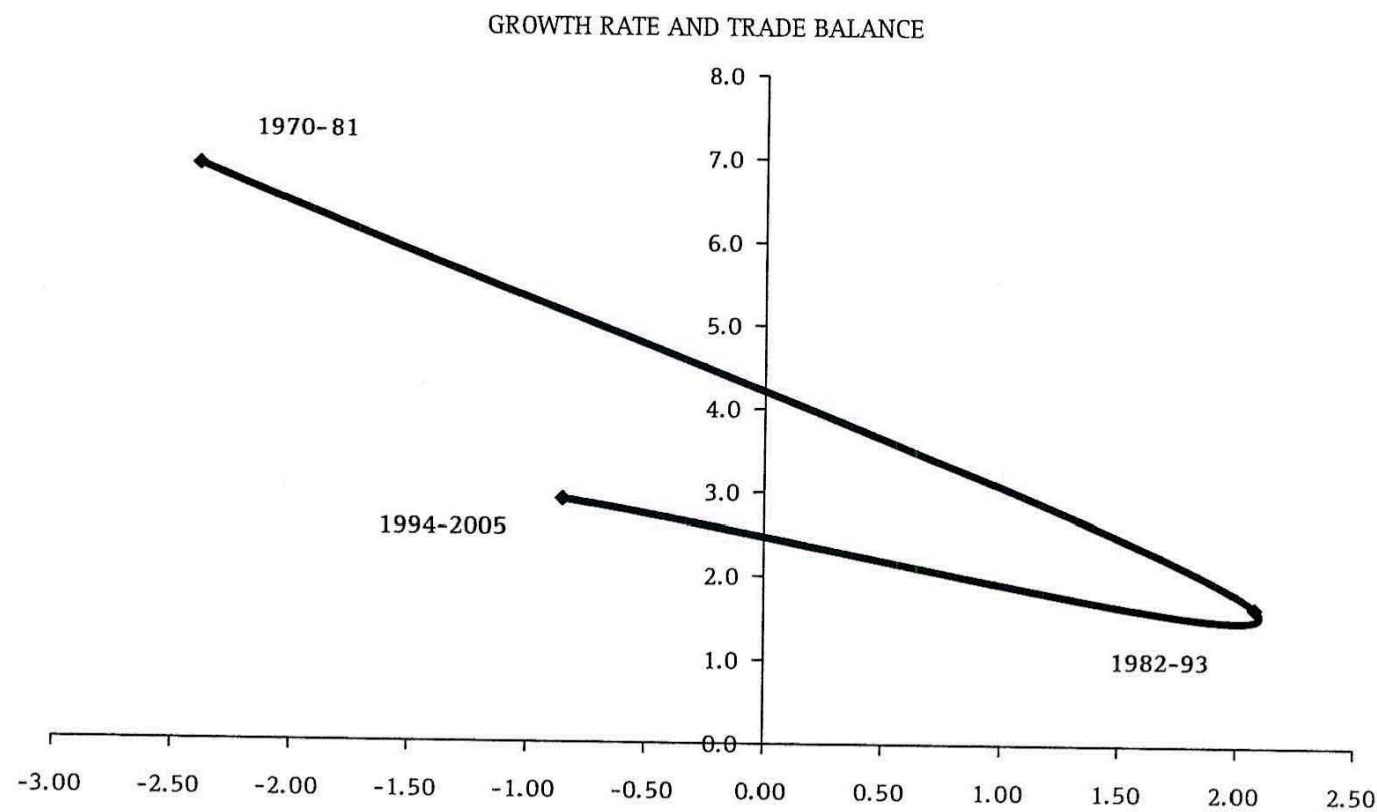*Sources:* Instituto Nacional de Estadística, Geografía e Informática and Banco de Mexico.

TABLE 3

MEXICO'S STRUCTURE OF FINAL SUPPLY AND DEMAND
IN CONSTANT MEXICAN PESOS
(percentages)

	1970	1981	1993	2005
Aggregate supply	100.0	100.0	100.0	100.0
GDP	91.2	87.7	83.9	70.4
Imports	8.8	12.3	16.1	29.6
Aggregate demand	100.0	100.0	100.0	100.0
Total consumption	72.2	65.2	69.6	58.0
Private	90.8	86.3	86.7	89.3
Public	9.2	13.7	13.3	10.7
Gross fixed investment	18.2	23.2	15.6	14.6
Change of inventories	2.5	2.0	2.0	0.3
Exports	7.1	9.6	12.8	27.1

Sources: Instituto Nacional de Estadística, Geografía e Informática and Banco de Mexico.

od. In contrast, consumption and investment saw a decline in their respective shares of total demand. The price paid for the export increases during the free trade and NAFTA periods was the sharp increase in imports during those periods as percentages of aggregate supply – exceeding the export share of demand – while GDP represented a lower percentage of total final supply. To summarize, a *structural* change in foreign trade in Mexico was the main and only real achievement of the free trade policy.

Figure 2 illustrates how trade liberalization policies and the integration process via NAFTA did not place Mexico on a path to real export-led growth. It shows that the relationship between trade performance and economic growth has been deteriorating. Between 1970 and 1981, Mexico's real GDP expanded at an annual average

GROWTH RATE AND TRADE BALANCE

Sources: own elaboration with data from Instituto Nacional de Estadística, Geografía e Informática and Banco de México.

rate of 6.9% and showed a trade deficit of 2.4% of GDP. The international debt crisis and the collapse of the oil boom resulted in an economic slowdown starting in 1982 which was aggravated by free trade policies; the average growth rate was 1.6% in the period of 1982-93, accompanied by a trade surplus of 2.1% of GDP. In the NAFTA period 1994-2005 real GDP expanded at a 2.9% annual average rate and showed a trade deficit of minus 1% of GDP. Therefore, with much greater amounts of foreign resources as a proportion of GDP than it received during the free trade period (1982-93), the Mexican economy was able in the NAFTA period (1994-2005) to grow, on average, at less than a half of the annual rates it enjoyed in the protected period (1970-81).

3.2. *Exports and employment*

The unemployment problem has undoubtedly been the sorest point in the Mexican economy for many years. Migration flows of Mexicans to the US due to lack of jobs in Mexico are by no means a new problem. During the NAFTA period these flows not only failed to stop but actually increased, despite the relatively high growth rate of the Mexican economy from 1995 to 2000 (Cornelius 2002).

The economically active population (EAP) in Mexico represents little more than half of the population over 12 years old and has been growing at a rate of 3.5% a year.[7] The average number of new jobs demanded each year in the last 15 years is about one million. The Mexican economy has not been able to generate this number in *any given year* in this period. Hence, there is a cumulative job deficit, which is difficult to assess accurately.[8]

Although the lack of jobs before this 15-year period was no less serious, the problem now is the higher number of new jobs people are

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[7] In 1990 the figure of estimated EAP was about 24 million people and the number of new jobs required to keep these people occupied was then about 900 thousand per year. In 2000 the EAP was around 34 million people, so the number of new jobs needed per year was about one million 200 thousand (data from Instituto Nacional de Estadística, Geografía e Informática, *Censos Nacionales de Población y Vivienda*, México).

[8] The data reported by official national surveys to the government agencies includes the underemployed as employed people; therefore, it is useless as an indicator of the real job deficit.

looking for and which they are not finding, which causes all sorts of social problems in Mexico as well as in the US, with the problem of illegal migrant workers. Today the remittances of US dollars from Mexican workers (legal and illegal) to their families in Mexico represent the second highest source of revenues in the current account of Mexico's balance of payments.

For these reasons, job creation has been a priority in the economic policy agenda of many administrations in the Mexican government. Thus, the main idea for opening up the economy was promoting exports and thereby creating jobs in the supposed comparative advantage in labour-intensive sectors.

This process, however, implied an adjustment in the labour market. Despite the neoclassical presumption that any job adjustment is automatic and smooth, it is widely recognized that, in practice, a trade opening causes short-term unemployment (Cox and Edwards 1997, pp. 8-9). Still, if free trade prevails in the medium and long term, comparative advantages are expected to appear, and in the case of countries with relatively abundant labour like Mexico, employment will rise in the labour-intensive industries and so growth may be based on trade expansion and comparative advantages (Dowrick 1997).

TABLE 4

STRUCTURE OF PAID LABOUR BY INDUSTRY
(percentages)

	1970-81	1982-93	1994-2004
Agriculture, forestry and fishing	31.9	27.0	21.9
Mining and oil extraction	1.2	1.0	0.4
Manufacturing	13.5	12.5	12.4
Construction	8.0	9.7	12.2
Electric, gas and sanitary services	0.3	0.5	0.6
Trading, hotels and restaurants	15.5	16.8	19.7
Transportation and communications	4.2	5.4	6.2
Financing, insurance and renting	1.9	2.2	2.1
Personal and social services	23.5	24.9	24.5
TOTAL	100.0	100.0	100.0

Source: Instituto Nacional de Estadística, Geografía e Informática, Sistema de Cuentas Nacionales, México.

Thus far, the *structural* change in exports has not corresponded to change in the total employment structure: while primary activities

have declined, manufacturing has not changed, and the only activities that have significantly increased their shares in total employment have been building and trading (mostly linked to domestic activities).

In order to measure the specific effects of dynamic export activity on domestic employment, I used an input-output model which includes the technical coefficients matrix, the direct employment vector and the final demand vector (in this case, of exports). The basic idea was to measure the impact of final demand on gross output, estimate employment coefficients by industry and, using the estimated gross output, calculate the employment generated by the level of gross output that is required by the actual level of exports. Based on this method I obtained the gross output required to produce the actual level of exports each year, and was able to calculate the level of employment in each industry corresponding to the level of gross output for the period 1978-2000[9] (see the Appendix). As a result of applying this model, I obtained the level of employment associated with the gross output required to produce the actual level of exports each year for the said period.

The results shown in figure 3 and table 5 indicate that while total employment grew at an average annual rate of 2.6% over the whole period, in the free trade and NAFTA periods the level of employment associated with total exports increased at higher rates, so that the percentage of employment generated by exports had a spike in 1995 and reached its highest level (15.4% of the total) in 2000. Most of this employment is in domestic production associated with exports (11.2%) while the *maquiladora* industry represents 4.2% of total.

The relative share of export employment tripled from 1980 to 2000, which is by no means a minor achievement. However, considering that total employment has not increased to a significant extent and also that in 1995, when export employment grew, the total level of employment diminished due to that year's crisis, one can infer that export activities have attracted jobs from domestic market activities, and especially from those which were displaced by imports.

Although the ratio of jobs indirectly generated by exports to export direct jobs – a little less than one in the three periods – is

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[9] I have an unwanted limitation in the availability of data for other years, especially regarding input-output tables of the Mexican economy, which are available only for the years 1980, 1985, 1990, 1993 and 1996, and are all projections of the 1980 matrix.

FIGURE 3

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TOTAL EMPLOYENT AND RELATIVE SHARES
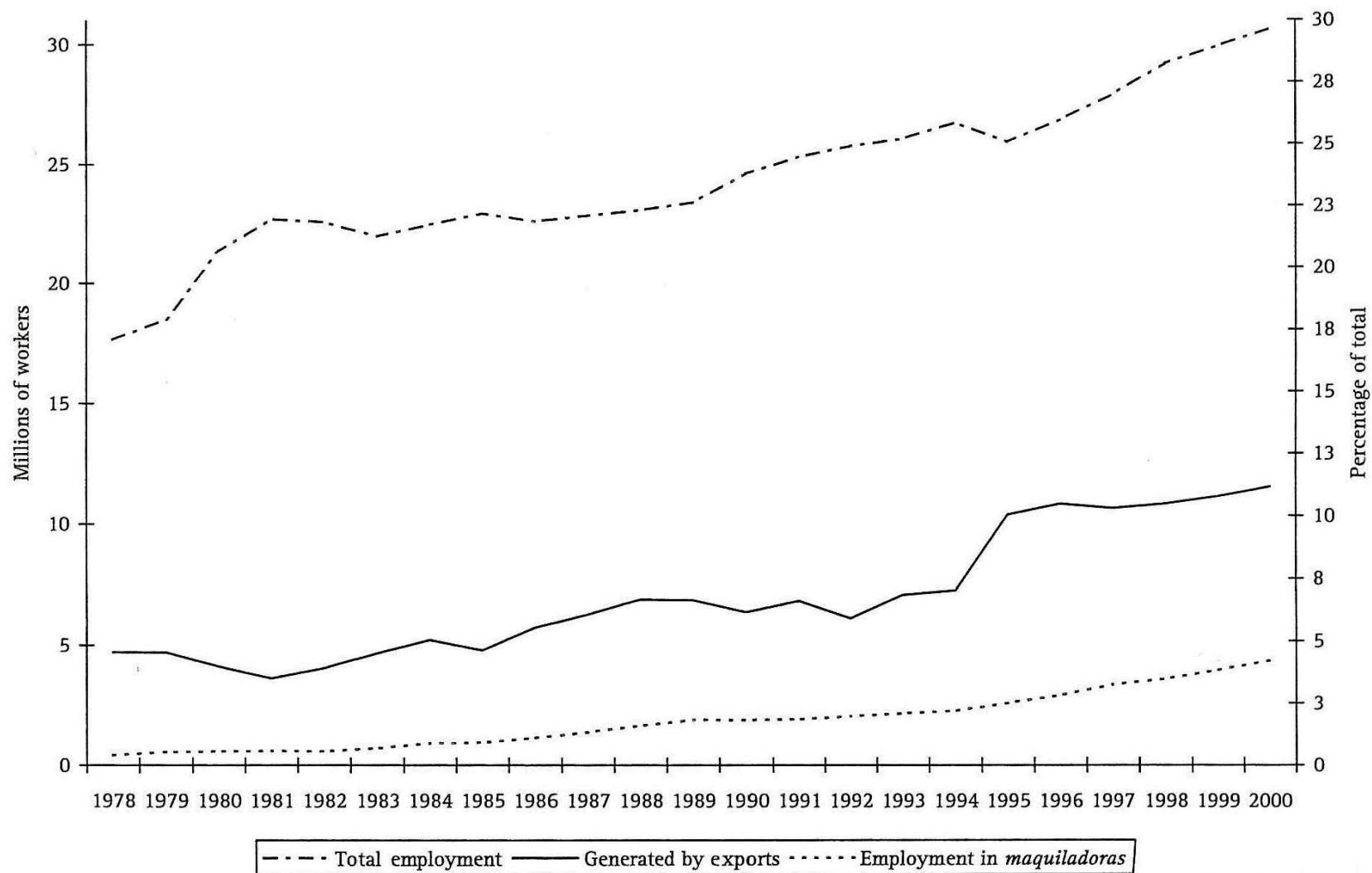
Sources: own elaboration with data from Instituto Nacional de Estadística, Geografía e Informática and estimates from the model in the Appendix.

about the same (see Table 5), it does not mean that the multiplying effects of exports on employment had not been affected by the rupture of domestic industry backwards linkages caused by trade liberalization.[10] What it shows is one of the undesired restrictions imposed on my analysis by the estimated input-tables utilized.[11]

TABLE 5

EMPLOYMENT STRUCTURE

	1980	1993	2000
Thousands of workers	21,356	26,040	30,613
Per cent structure			
Total	100.0	100.0	100.0
Domestic market	95.5	91.1	84.6
Exports and *maquiladoras*	4.5	8.9	15.4
Exports w/o *maquiladoras*	4.0	6.9	11.2
- Direct	2.2	3.9	5.9
- Indirect	1.8	3.0	5.3
Maquiladoras	0.6	2.1	4.2

Source: Own elaboration based on data from Instituto Nacional de Estadística, Geografía e Informática, *Sistema de Cuentas Nacionales*, and Stata Matrix.

In order to see how much of this multiplying effect had actually been lost, I estimated the level of gross output required for exports in the 1994-2000 period (the first half of NAFTA) and the corresponding employment associated (directly and indirectly) with exports with two matrices (from 1980 and 1993), and compared the obtained results. The differences between the two estimates for gross output and employment generated by exports all prove positive and favourable for the 1980 matrix, which means that, if the economic structure of the Eighties had remained the same in the Nineties, the level of employment and gross output associated with exports would have been higher (see table 6).

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[10] This is an important issue that has been widely analyzed (see Ruiz-Nápoles 2001 and 2004).

[11] Only the 1980 input-output matrix was calculated based on an industrial survey carried out by a government agency. The rest are matrices estimated with various projection methods.

TABLE 6

DIFFERENCES OF EXPORTS GROSS OUTPUT AND EMPLOYMENT ESTIMATED
WITH 1980 MATRIX FROM VALUES ESTIMATED WITH 1993 MATRIX
(percentages)

Year	Gross output	Employment
1994	6.14	2.07
1995	8.47	3.03
1996	8.52	3.46
1997	8.73	3.68
1998	10.24	4.26
1999	5.63	3.65
2000	5.62	3.69

Source: Own elaboration with data from Instituto Nacional de Estadística, Geografía e Informática and CIESA.

3.3. *Exports and imports*

Mexico's foreign trade (both exports and imports) increased notably subsequent to the trade opening in the Eighties, but it did not diversify, as is shown in table 7. Most exports and imports were concentrated in the North American market – the US and Canada, that is even before NAFTA.

TABLE 7

TRADE BALANCE OF MEXICO

	1970-81		1982-93		1994-2005	
Total exports	90,138.4	100.0	315,999.2	100.0	1,653,178.6	100.0
North America	54,518.5	60.5	233,417.3	73.9	1,472,096.5	89.0
Rest of the world	35,619.9	39.5	82,581.9	26.1	181,082.1	11.0
Total imports	114,293.0	100.0	307,963.1	100.0	1,718,581.6	100.0
North America	74,007.0	64.8	219,041.4	71.1	1,184,427.6	68.9
Rest of the world	40,286.1	35.2	88,921.7	28.9	534,154.1	31.1
Balance	−24,154.7		8,036.1		−65,403.1	
North America	−19,488.5		14,375.9		287,668.9	
Rest of the world	−4,666.2		−6,339.8		−353,072.0	

(Millions of US dollars)

Source: Instituto Nacional de Estadística, Geografía e Informática, *Estadísticas de Comercio Exterior*, México.

From the initial period in 1970-81, exports and imports tripled in the free trade period 1982-93 and increased five times for the period 1994-2005. The trade balance improved in the free trade period

FIGURE 4
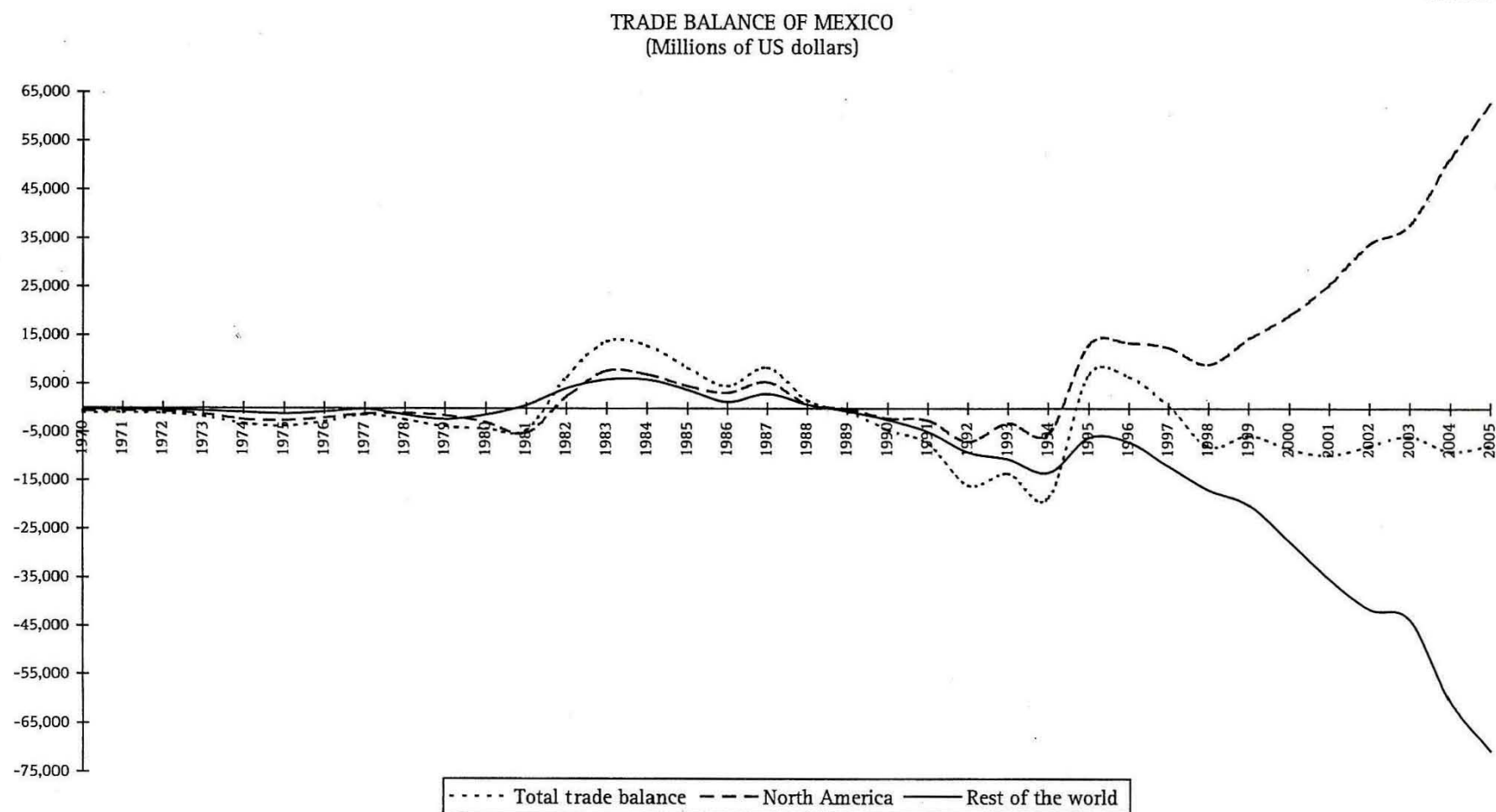
TRADE BALANCE OF MEXICO
(Millions of US dollars)

Sources: own elaboration with data from Instituto Nacional de Estadística, Geografía e Informática and Banco de México.

while it deteriorated for the NAFTA period, turning into a deficit of 65 billion dollars.

The actual trend of the trade balance from the period of 1970-2005 is shown in figure 4. It must be observed that, while there was a growing trade surplus with the North American market as a whole, there was a growing deficit with the rest of the world in the NAFTA period.

It was precisely between 1994 and 2005 that the accumulated trade deficit with the rest of the world reached the high figure of 353 billion dollars which offset the accumulated trade surplus with the NAFTA area of 287 billion dollars, so there was an overall accumulated trade deficit of little more than 65 billion dollars.

Most of the trade deficit in the NAFTA period comes from trading with Asian countries, mainly Japan, China, Hong Kong, Taiwan and South Korea. This is surprising, since the Mexican government has established and maintained high tariffs on the import of consumer goods from these countries, with which there is no free trade agreement. These growing Asian imports consist of increasing inputs for manufacturing export industries and, on the other hand, final goods imported – legally or illegally – as if they were coming from the NAFTA area.[12]

4. Free trade and equality in Mexico

One of the desired results of free trade is an improvement in *equality*. As *previously noted*, this takes place in the form of a redistribution of income among the owners of factors of production, which, by necessity, implies a redistribution of income among the population.

To be precise, the Pareto criterion applied for income distribution among factors consists in improving one factor of production income without harming the other. This is impossible in the Heckscher-Ohlin-Samuelson free trade model because if there is full employment in both factors, the resulting (partial) specialization based on relative factor endowment leads to increasing the abundant factor in-

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[12] There are, of course, no official data on these latter imports, but they are sold in formal and informal markets in most cities around the country.

FIGURE 5
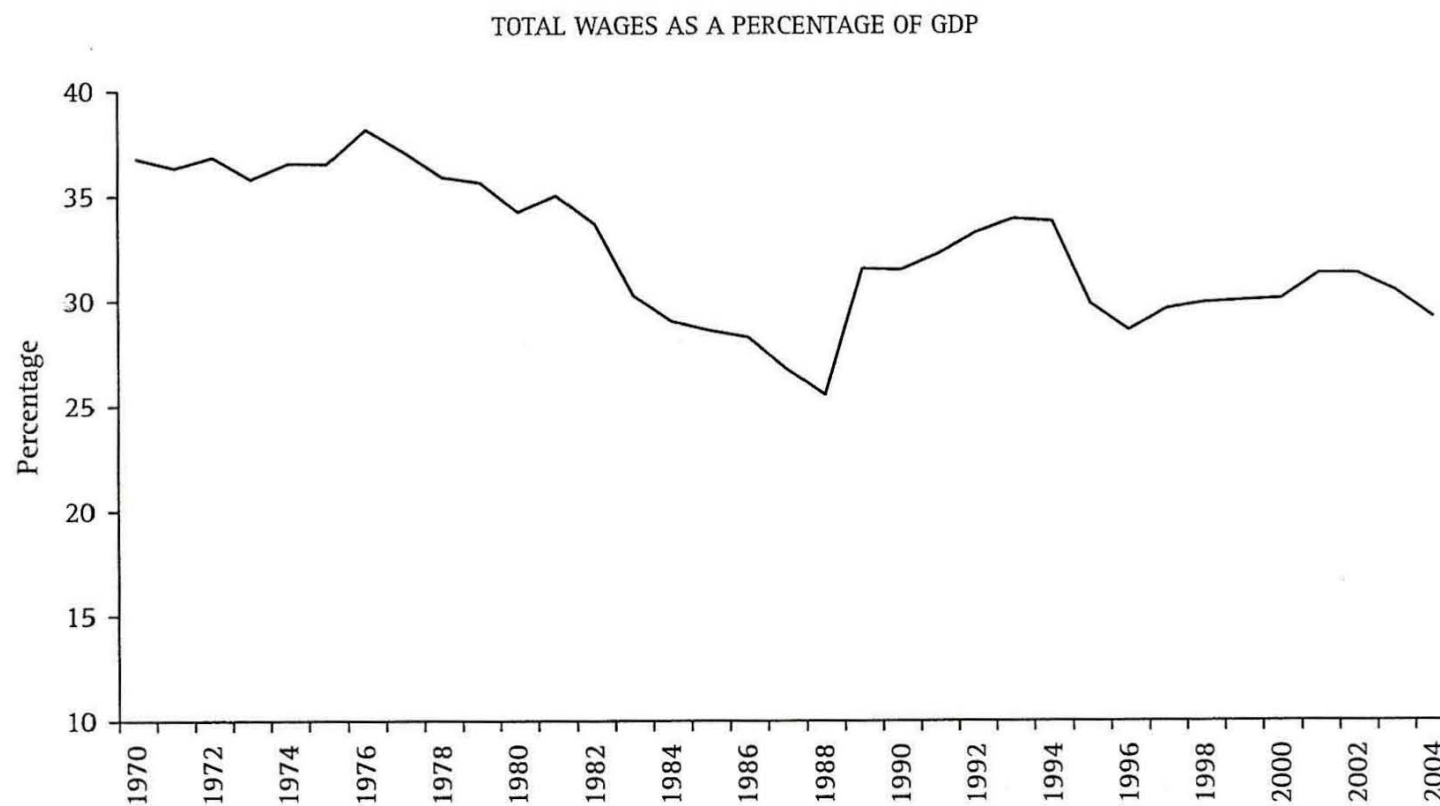
TOTAL WAGES AS A PERCENTAGE OF GDP

Sources: own elaboration with data from Instituto Nacional de Estadística, Geografía e Informática and Banco de México.

come in real terms, while simultaneously reducing the scarce factor's real income (Stolper and Samuelson 1941). If there is no full employment in both factors, which is the case for many Latin American countries, we might expect free trade to lead to an increase in both factors' real incomes, resulting from value added real increases. Yet the distribution of these increases should differ from that of the pre-free trade situation, the greatest increase going to the abundant factor, the smallest to the scarce one. In the case of Mexico the relative abundant factor is, by far and away, *labour*, which is why one would expect total wages to increase their share in the total value added in a free trade situation as the employment of labour increased.

In Mexico the proportion of wages to GDP (the wage bill) in real terms, shown in figure 5, was better in the protected trade period, 1970-81 (36.2 in average), than in the free trade period, 1982-93 (30.4) and in the preferential trade area period 1983-2004 (30.3). In fact, the wage bill declined, though it was expected to increase as a result of the expansion of exports and the overall increase in productivity. So we can say that in this case of a non-full employment country free trade policy has actually *harmed* the abundant factor of production (that is, labour) in real terms.

In the same graph one can, however, observe that there was a sub-period (1988-94) in which the wage bill recovered in real terms. In this sub-period there was a signed agreement between nationwide workers' unions, chambers of commerce and trade, and the federal government to control the increase of prices and wages, thereby checking inflation. It was a non-liberal policy that actually worked. However, some of the redistribution effect must be also attributed to other forces like the use of the exchange rate as an anchor to hold back inflation at the cost of having a real appreciated currency (see Fischer 2001). But this exchange rate policy cannot be labeled as neo-liberal either.

A measure of inequality, the Gini coefficient,[13] shows a trend that goes exactly in the opposite direction to expectations. This in-

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[13] The Gini coefficient is a measure of inequality of distribution, defined as the ratio of the area between the Lorenz curve of the distribution and the curve of the uniform distribution, to the area under the uniform distribution. It is used to measure income inequality, expressed as a number between 0 and 1, where 0 corresponds to perfect equality and 1 corresponds to perfect inequality. The data and the graph for Mexico were taken from Székely (2005).

FIGURE 6

GINI COEFFICENT 1968-2004
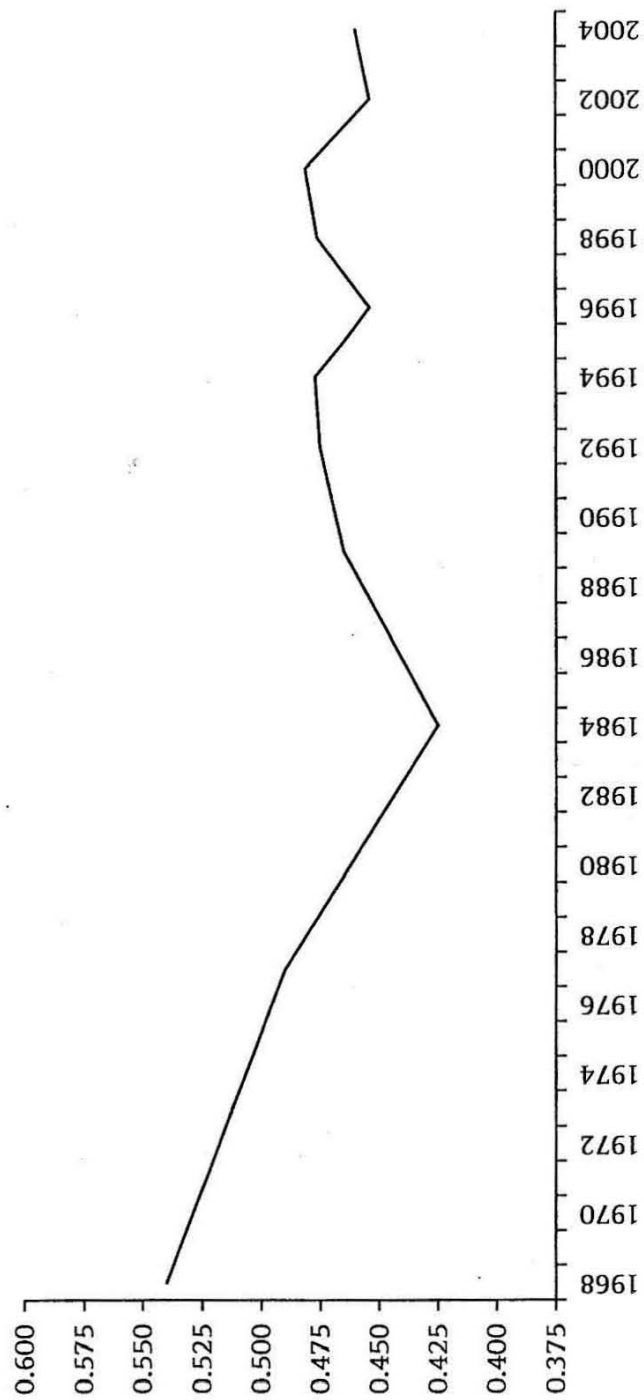
equality coefficient, which fell from 1968 to 1984, shot up in 1985 and maintained an upward trend thereafter, according to the official data (Székely 2005) and as can be seen in the graph in figure 6, based on them.

5. Contradictory results of the 'structural change'

To obtain the effects of labour and production shifts caused by free trade and NAFTA on the structure of the Mexican economy, I analyzed the national income accounts for the period 1970 to 2004. I considered four variables: workers employed by industry, GDP, exports and imports at constant 1980 prices by industry. I considered 72 industries, leaving out the federal government and military services industry. I then went on to distinguish between tradable and non-tradable goods industries. The former were those that had exports or imports in any single year during the period of analysis. I concentrated on these industries, and went on to calculate the number of workers per 1 million of GDP at constant prices and its inverse, the amount of GDP produced per worker for the whole period, but I chose only four years for comparison: 1970, 1980, 1990 and 2000. After analyzing the ratio of workers per 1 million of GDP among industries, I divided them into two groups: labour-intensive goods and input-intensive goods industries, establishing as a limit two thousand workers per 1 million of GDP at constant prices, so that any ratio above this limit was considered labour-intensive and, below the limit, input-intensive. The results of these calculations are shown in table 8.

When the results of these four years were compared, I noticed some striking results that seemed to contradict in principle what one would expect from a free trade policy: that is, the expected shifts in production and labour predicted by the neoclassical theory of trade – the Heckscher-Ohlin theorem.

If it is assumed that Mexico is more abundant in labour than in other factors of production relative to the US, its main trading partner, one would expect relatively lower wages in Mexico than in the US. As a consequence, if there is any comparative advantage under free trade conditions, it should be in labour-intensive goods. So, as free trade opens up, the comparative advantages appear, and Mexico

should end up specializing in labour-intensive goods production. Full specialization is ruled out by the assumption of variable costs, but domestic production is expected to move towards labour-intensive goods and away from input-intensive goods. Consequently, the export of labour-intensive goods is also expected to grow, as is the amount of labour used in the production of these goods (whether exported or not exported), relative to the input-intensive production of goods, which is supposed to decrease. An increase in the imports of these latter industries is expected.

The data in table 8 shows that the GDP of tradable goods industries declined from 40.2% in 1970 to 37.2 in 1980, and subsequently remained at 37.9% in 1990 and 2000. The number of workers employed in these industries declined relatively from 52.2% of the total of workers in 1970 to 44.1 in 1980, 44 in 1990 and 37.5% in 2000. It seems strange that the biggest share of total employment today corresponds to non-tradable goods industries (62.5%), especially taking into account the structural change that has occurred in the economy, and the fact that it is among the most open economies in the world.

If we look at the differences between labour-intensive and input-intensive goods industries,[14] one can see that while the former group retained the majority of employed workers (90% in average), it decreased its share in the GDP from 86.2 in 1970 to 52.5 in 2000. Also, this group of industries diminished in number from 48 in 1970 to 31 in 2000, and its share of exports from 85.9% in 1970 to 37.7 in 2000. The opposite is also true for the input-intensive goods group which now produces 47.5% of tradable goods GDP, and exports 62.3% of the total, but absorbs only 10.2% of that sector's workforce.

In the year 1990, when Mexico was already open to trade its exports freely, the figures for labour-intensive goods were 31.3% and 68.7% for input-intensive goods, while imports were 71.5% of labour-intensive goods and 28.5% of input-intensive goods.

GDP per worker – a gross measure of productivity – was five times higher in input-intensive goods industries than in labour-intensive goods industries in 1970, and has increased sevenfold by

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[14] Due to the lack of reliable information regarding capital stocks in the various industries and for the periods analyzed, I defined as input-intensive those industries that have a content of less than two thousand workers per one million constant pesos of output, the weighted average for tradable goods being between four and seven thousand in the four years considered (see table 8); the rest is defined as labour-intensive industries.

TABLE 8

RELATIVE IMPORTANCE OF LABOUR AND INPUTS INTENSIVE GOODS INDUSTRIES
(Constant 1980 pesos)

All private industries (72)	1970	%	1980	%	1990	%	2000	%
Employed workers (thousands)	12,446.2	100.0	19,434.9	100.0	23,400.6	100.0	30,519.5	100.0
GDP millions	2,302.3	100.0	4,382,8	100.0	5,248.5	100.0	7,421.6	100.0
Workers per 1 million GDP	5,406		4,434		4,684		4,112	
GDP per worker	184.99		225.51		213.49		243.18	
Tradable goods industries	61		61		61		61	
Employed workers (thousands)	6,498.7	52.2	8,565.4	44.1	10,288.5	44.0	11,441.6	37.5
GDP millions	925.5	40,2	1,630,7	37.2	1,991.0	37.9	2,812.8	37.9
Exports in millions	90.1		347.5		708.7		1,637.1	
Imports CIF in millions	173.3		445.9		584.6		1,791.9	
Workers per 1 million GDP	7,022		5,253		5,167		4,068	
GDP per worker	142.41		190.38		193.53		245.84	
Price ratio I.I./L.I.	0.844		1.000		0.836		0.616	
Labour-intensive goods industries	48	78.7	38	62.3	38	62.3	31	50.8
Employed workers (thousands)	6,297.0	96.9	7,872.6	91.9	9,262.4	90.0	10,269.6	89.8
GDP millions	797.4	86.2	1,133.5	69.5	1,226.9	61.6	1,476.6	52.5
Exports in millions	77.4	85.9	74.1	21.3	221.9	31.3	616.4	37.7
Imports CIF in millions	142.0	81.9	300.5	65.9	418.0	71.5	1,143.5	63.8
Workers per 1 million GDP	7,897		6,945		7,549		6,955	
GDP per worker	126.63		143.98		132.46		143.79	
Inputs-intensive goods industries	13	21.3	23	37.7	23	37.7	30	49.2
Employed workers (thousands)	201.7	3.1	692.7	8.1	1,026.0	10.0	1,171.9	10.2
GDP millions	128.1	13.8	497.2	30.5	764.1	38.4	1,336.2	47.5
Exports in millions	12.7	14.1	273.3	78.7	486.8	68.7	1,020.7	62.3
Imports CIF in millions	31.3	18.1	155.4	34.1	166.6	28.5	648.4	36.2
Workers per 1 million GDP	1,574		1,393		1,343		877	
GDP per worker	635.16		717.72		744.74		1,140.13	

* I.I. = input intensive industries; L.I. = labour intensive industries.

Sources: own elaboration on data from Instituto Nacional de Estadística, Geografía e Informática, *Sistema de Cuentas Nacionales*.

2000. The changes in technology through time have affected both groups, but more so in the case of input-intensive goods, where the average number of workers per 1 million of GDP has come down to 877, almost half the 1970 figure.

If we take the trade balance by industry as a gross measure of *revealed comparative advantage*, we observe that, from 1980 to 2000, Mexico had a positive balance in input-intensive goods industries and a negative balance in labour-intensive goods industries.

So, according to the national income accounts data, we see that the Mexican economy has been moving from labour-intensive activities to non-labour intensive activities, and it is in these activities where comparative advantages are *revealed*. These two results are in plain contradiction to what neoclassical trade theory *predicts* for free trade conditions, if we assume that Mexico is labour abundant relative to its trading partners.

Conclusions

Having analysed the performance of the Mexican economy in three different periods, each characterized by a different trade policy, two main conclusions can be drawn.

The economy's performance proves much worse with free trade than with protected trade in almost every indicator studied. NAFTA has been beneficial to Mexico to the extent that it is not a unilateral free trade agreement, but rather a limited free trade area agreement;[15] in fact, it could be improved if it were utilized in full, while compensating for the asymmetries between Mexico and the US.

The movement towards 'more efficient' production in Mexico is not the result of neo-liberal policies, but of the general advance of technology and industrial production throughout the world in the last three decades. In this respect, the neoclassical theory of international trade (H-O theorem) is far behind the contemporary realities of trade.[16] This does not mean, however, that modern production and

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[15] The complex social and economic phenomenon of integration between Mexico and the US, to which NAFTA has largely contributed, has had clear positive as well as negative effects on the Mexican economy.

[16] A similar result is obtained by Rodrik and Hausmann (2006).

trading is *better* for achieving social ends like full employment, improved education, or more equality in income distribution (all of these, with regard to economic growth, are considered development indicators). These are objectives of political economy, which cannot be reached without state policy measures; free market forces cannot achieve them. On the contrary, unregulated movement of capital, goods, services and people between countries in the modern world may lead to unstable markets in which the only beneficiaries are the speculators.

APPENDIX

Input-output analysis

To estimate the level of Gross Output generated by aggregate demand, we start from Leontief's system of equations:

$$x = Ax + f, \tag{1}$$

where x = gross output, A = technical coefficients matrix, f = final demand vector (Pasinetti 1977; Bulmer-Thomas 1982; Dervis, De Melo and Robinson 1982; Aroche and Rupra 1991), the solution for which is:

$$x = (I - A)^{-1} f, \tag{2}$$

where $(I - A)^{-1}$ is a matrix known as "Leontief's inverse".

A specific application of this model is:

$$x^d = (I - A^d)^{-1} (f^d + e^d), \tag{3}$$

where x^d = domestic gross output, A^d = technical coefficients matrix for domestic transactions, f^d = domestic final demand vector and e^d = vector of domestically produced exports (Bulmer Thomas 1982; Dervis, De Melo and Robinson 1982).

If we split the demand according to its source, we have:

$$x_f^d = (I - A^d)^{-1} f^d, \tag{4}$$

where x_f^d = domestic gross output exclusively associated with domestic demand, and

$$x_e^d = (I - A^d)^{-1} e^d, \tag{5}$$

where x_e^d = domestic gross output exclusively associated with exports.

I estimated equation 5 for Mexico with annual values from 1978 to 2000, taking as A^d the technical coefficients matrix for domestic transactions from 1975, 1980, 1985, 1990, 1993 and 1996. The matrix year was the midyear for these five-year periods, from 1978 to 1992; 1993 and 1994 were estimated with the 1993 matrix and the period 1995-2000 was estimated with the 1996 matrix. The variable e^d was the vector of exports of goods and services, not including *maquiladoras*, in real terms for the period 1978-2000.

The first step is to obtain the labour coefficients vector, according to the following equation:

$$\lambda = n\hat{Y}^{-1}, \tag{6}$$

where λ = labour coefficients vector, n = employment by industry vector, $\hat{Y}$ = diagonal matrix of gross output by industry,

$$\hat{Y}1 = x^d, \tag{7}$$

where 1 = unit vector of order m, and x^d is determined by equation 3.

The estimated coefficients express in each industry the following ratio:

$$\lambda_i = n_i / y_i,$$

where n_i = employment of industry i, y_i = gross output in industry i. λ is the vector of industry labour coefficients, where $i = 1, 2, ..., m$.

Labour generated by exports in each industry is calculated by the following equation:

$$n_e = \lambda\hat{Y}_e, \tag{8}$$

where n_e = vector of industry employment associated to gross output generated by exports, λ = vector of labour coefficients, estimated by equation 6, and $\hat{Y}_e$ = diagonal matrix of gross output generated by exports estimated by equation 5.

Export direct employment is a vector estimated by:

$$l_e = \lambda\hat{E}, \tag{9}$$

where l_e = direct employment associated to exports, λ = vector of labour coefficients, estimated by equation 6, and $\hat{E}$ = diagonal matrix of exports by industry,

$$\hat{E}1 = e^d. \tag{10}$$

DATA SOURCES

Input-output, domestic transactions matrices for Mexico, 72 entries, for years 1980 and 1985, from Instituto Nacional de Estadística, Geografía e Informática, INE-GI, *Sistema de Cuentas Nacionales*, México.

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