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NEW PROBLEMS AND OPPORTUNITIES FOR
INDUSTRIAL DEVELOPMENT
IN LATIN AMERICA.

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I. INTRODUCTION

Trade liberalization, the de-regulation of economic activity, the privatization of public assets, and a much more careful management of macroeconomic aggregates, are bringing about far reaching changes in Latin America. A more competitive atmosphere is gradually spreading throughout the region as firms, markets and institutions adapt themselves to a new macro and micro environment.

A rather long period of import substitution efforts in which firms basically responded to signals emerging from the domestic market is gradually coming to an end.

Neoclassical economists have presented a rather derogative view of the ISI process and of the role played by industrial policies during the immediate post war period. In their opinion, active government intervention in the field of manufacturing production was only capable of inducing the erection of inefficient industrial plants and of subsidizing rent-seeking entrepreneurs, incapable of competing in an increasingly contestable international market place.

Contrary to such view, however, we believe that the outcome of the Latin American industrialization process is by no means as negative as the orthodox literature suggests. In our opinion, the ISI process triggered off the creation and diffusion of major economic institutions of crucial importance for modern capitalist development. The expansion of industry induced the gradual generation of a sophisticated industrial culture as well as the accumulation of a vast array of domestic technological capabilities. *Pari pasu* with the expansion of manufacturing production many individual firms and industries managed to develop a proprietary stock of technological skills and engineering know how which allowed them gradually to expand their productivity and international competitiveness, closing the gap with the world's technological frontier and gaining participation in foreign markets.

Admittedly, the process was not as impressive as the one observed in some of the South-East Asian countries but it certainly had more positive long term features than those normally perceived by orthodox economists.

Independently of how we judge the ISI process, however, it is important to recognize that many of its institutions, and much of its policy agenda - such as, for example, the use of tariff protection to induce the erection of new plants and industries - have now been abandoned by Latin American governments which have instead turned towards trade liberalization and the de-regulation and privatization of economic activities in the expectation that the 'invisible hand' of the market would bring about a more rapid rate of modernization and technological progress than the one

attained during the ISI period under the guidance of the state.

Firms have been gradually reacting to such changes in their operating environment. 'Old' forms of production organization - involving, for example, large inventories, a high degree of vertical integration, etc. - are being left behind by manufacturing firms as they bring on board, and learnt how to employ in their specific 'in house' circumstances 'just in time' and 'flexible manufacturing' production organization principles. The 'outsourcing' of intermediate inputs and services and a much higher import content are also becoming part of the current production organization strategy.

The turbulence of the 1980's is now well in the past and the region is gradually learning to live with trade liberalization, the deregulation of markets and the privatization of public assets. Many questions emerge, concerning such transition. Among them, the following ones: Is the region's production structure in any way different today from what it was, say, ten or fifteen years ago, and if so, in what way? Can we expect the emerging new production organization model to perform better or worse in terms of productivity growth than the ISI model? What is the likely impact of the change in policy regime upon different Latin American countries? What are the new sectorial industrial organization scenarios gradually developing in the various countries of the region and how are different individual agents - MNCs, large domestic conglomerates, locally-owned SMEs, etc. - adapting to the changing global environment? What changes in production planning and in the organization of work are taking place at the shop-floor level? Are such changes neutral or biased towards uneven factor savings? What lessons can we derive from the region's experience which could be useful for other countries in the world - such as, for example, many of the ex socialist nations - which are currently going through a similar transition between technological and regulatory regimes? Etc.

Some of these questions will be examined throughout this paper. We have to begin, however, by pointing out that the profession still lacks a suitable theory of growth on the basis of which to proceed for an enquiry of this sort. Conventional neoclassical thinking based on the somewhat oversimplified model of the 'representative agent' and of steady state equilibrium growth finds it very difficult to integrate micro and macro issues in a way that could be useful for our present purposes. When the production structure, markets and the institutional fabric of any given society go through a rather long period of turbulence and thousands of firms close down - 7.000 in Chile throughout the 1980's, more than 20.000 in Argentina, etc. - markets get thinner and disappear, institutions die or suffer a dramatic process of transformation in their means and ends, we can not simply assume that by the time the turbulence is over the same structure remains in place and returns to an equilibrium growth path whose 'stylized features' are just

marginally different from the ones we had before the disequilibrium episode. In a situation of this kind many new industries and institutions emerge while others decline and disappear, the labour and capital markets change in their structure, institutions and performance, different forms of production organization are put into place at the individual firm level, a new public/private mix develops in areas such as savings and investment, in the financing and provision of 'public goods' etc. The process we are briefly describing entails a major change in what the French School describes as the 'mode du regulation' of any given society. It is quite evident that in a transition of this sort we simply lack the knowledge and understanding as to what the new institutions and patterns of microeconomic behaviour are all about. New micro and meso research becomes badly needed if we are to illuminate the nature, problems and opportunities of the emerging new situation. The purpose of the present paper is to begin an exploration of this sort, in the understanding that a lot more work needs to be done if we are correctly to describe the evolving new environment.

As far as Latin American is concerned one initial point is clear. In spite of somewhat comparable cross-country efforts into trade liberalization, privatizations and market de-regulation actions, changes have been taking place at a very different rhythm and in a very different way in different nations and we observe a major variance among them in the attained results. This has been so, on the one hand, as a result of the fact that the timing, sequence, depth, etc. of the trade liberalization and de-regulation actions have been different among countries and so have also been the amount of internal political support and external help each country managed to secure for its structural reform policies. On the other hand, macroeconomic stabilization and structural reform policies have been applied to economies that strongly differed from each other in terms of their maturity, institutions and production organization models.

The profession has not as yet developed a fully satisfactory growth theory capable of illuminating some of the micro-to-macro issues involved in transitions of this sort and, even less so, the complex interdependencies that exist between microeconomic behaviour and changes in policy regime, at different levels of economic maturity, in imperfect markets and under incomplete knowledge and perception of what the transition actually implies. We simply do not know much as to how changes in the rate of interest, in the exchange rate, prices volatility derived from macro policies and external shocks, affect different branches of manufacturing production - which are characterized by the utilization of very different factor proportions in their production functions - or different types of enterprises - which have different access to factor markets and know how, imperfect information and perception as to the implications of the change in policy regime, etc. And viceversa, we also do not know much as to how the degree of structural maturity previously attained by any given society affects the long term

sustainability of its trade liberalization and market de-regulation efforts. Theory seems to be lacking in all these directions. As a result of such lack of a priori theorizing we propose to proceed here in an inductive way trying to present to the reader an 'appreciative' story - as R.Nelson would put it (Nelson, 1995) - which might later on become useful for other more formal ways of theorizing. We begin by briefly reviewing some of the major 'stylized' features of the emerging new situation.

II. MAJOR 'STYLIZED' FEATURES OF THE EMERGING PRODUCTION STRUCTURE.

To a greater or lesser extent some of the 'stylized' features we shall review in this section can be found in all of the Latin American countries although it is certainly true that the idiosyncratic nature of each particular case does not have to be forgotten when we look at country-specific performances. Among the central features of the emerging new production structure the following ones should be kept in mind:

a. Manufacturing industry is no longer the main 'engine' of growth, as it was during the ISI period. Neither is it, or is it likely to be in the future, an important source of employment absorption. Natural resources, raw material processing industries and non tradable activities have now become much more important sources of economic growth and employment.

b. Economies have become much more exposed to external competition both in terms of exports and imports. The external sector of the economy now plays a more significant role than in the past. Exports of resource-base processing industries and of foodstuffs and primary products are growing at a very rapid pace but imports of capital goods and of labour intensive products are expanding even more rapidly turning the regional balance of trade in manufacturing increasingly negative.

c. The degree of economic concentration has increased significantly over the last decade as a small group of domestic conglomerates and of local subsidiaries of large multinational corporations managed to adapt themselves better to the new policy regime and regulatory environment and have therefore gained participation in GDP. Small and medium size enterprises as well as public firms have rapidly lost market share in manufacturing production and in retail trade, both as a result of deliberate privatizations and also as a consequence of market imperfections and of lack of understanding of what it takes to be competitive in the new incentives regime.

d. Only a small group of the countries in the region seem to be back on a steady state growth path after the macro instability and turbulence of the 1980's. An increase in the rate of savings and investment and the creation of new production capacity appear as

important sources of economic growth in this case. Chile is the more clear example of such situation. Yet another group of countries in the region have managed to emerge from the episode of turbulence of the 1980's and have thereafter attained a rapid rate of economic expansion during the first half of the 1990's, in spite of the fact that they are still struggling with various signs of macro uncertainty. Their rapid rate of growth in the early 1990's has been more the consequence of an increasing rate of capacity utilization and of labour saving organizational changes than of new investments than in the first case. Argentina and Brazil are outstanding examples of this situation.

e. Average labour productivity is still far behind international standards and the evidence suggest that the gap is hardly closing through time.

If we look more specifically at the industrial sector we notice the following :

a. Raw material processing industries - i.e. those producing pulp and paper, petrochemicals, steel, vegetable oil, aluminum, fishmeal, minerals, etc. - have performed much better than engineering and knowledge intensive industries producing capital goods, fine chemicals or electronic instruments and equipment.

b. A new vintage of highly capital intensive, continuous-flow, raw material processing plants, has been erected during the 1980's in various countries of the region and has gained considerable weight in aggregate manufacturing production and exports.

c. Contrary to the above, signs of contraction and decay, as well as a strong rate of company mortality, can be observed in labour intensive industries producing textiles, apparel, shoes, etc. as well as in the capital goods industries producing machine tools, industrial boilers, instruments, etc. where firms are having great difficulties in adapting themselves to a more open trade regime and to numerically-controlled product designs and production processes.

d. Although the inflow of direct foreign investment decreased during the 1980's, macroeconomic stability, recent changes in the property rights regime, etc. have triggered off a new wave of foreign interest for the region. Strategic alliances between large domestic conglomerates, MNCs, world-wide banking houses and international consulting firms are rapidly expanding in many Latin American countries in relation to the exploitation of resource-based processing industries, foodstuffs production, energy generation and distribution, telecommunications, transport and shipping facilities, etc. The privatization of public assets has offered many new opportunities for such alliances and for the inflow of external funds.

e. The organization of work at the individual firm level and the degree of vertical integration with which production facilities are being operated have suffered major changes as a result of the transition to more open trade regime and more flexible labour markets. It is evident that the high degree of vertical integration with which plants used to work in the 1970's is no longer profitable today. Many firms producing capital goods, consumer durables, automobiles, etc. have in recent years increased the import content of their production, substituting locally produced parts for parts and subassemblies foreinged produced equivalents. This is having a dramatic impact upon their former suppliers - many of them small size family enterprises involved in metalworking production - among which the rate of company mortality has been dramatically high. Large firms have also moved towards the de-verticalization of production organization developing external providers for services, ancillary activities, etc. Simultaneously, they have reduced their commitment towards local product engineering design and R&D activities. Pari pasu with the above, they have also increased their external search for, and their utilization of, foreign licenses in substitution for domestically-designed products and production processes.

f. A significant difference can be observed between firms that adopt a proactive strategy of adaptation to the new circumstances and invest in new hardware, in the re-training and upgrading of its personnel, and those other firms that behave defensively, introducing organizational changes of a labour saving nature, but without committing themselves much to new investment in capacity expansion.

So much for some of the 'stylized' features of the new situation. In the next two sections of the paper we examine the available statistical evidence supporting the above generalizations.

III. THE GLOBAL ECONOMY AND THE INDUSTRIAL SECTOR IN THE POST-WAR PERIOD.

III.1. Central Features of the global restructuring process after the Debt Crisis

The years that followed World War II constitute a period of rapid economic expansion for Latin America. The level of production activity and the rate of investment recovered after a rather long period in which new pieces of imported machinery and external financing were almost entirely unaccessible. The 1950's and 1960's can rightfully be considered as the 'golden age' of the import substitution industrialization model. Large waiting lists for consumer durables and capital goods together with high tariff protection and subsidized financing for the erection of new production facilities provide the overall incentives regime in which thousands of new firms developed. Under such circumstances it

is hardly surprising that 'sellers-markets' obtained throughout the production structure - particularly so in the field of consumer durables - and that the rate of economic expansion far exceeded the one attained during previous decades in which the external constraint was rather dramatic.

From the mid-70s onwards, however, the growth process shows clear signs of deceleration in various countries of the region, notably Argentina, Uruguay and Chile. A widespread feeling develops in these cases that the ISI strategy is gradually losing momentum and that the economy has reached a 'plateau' from which it could be only be pushed out either by further subsidies inducing the production of capital-intensive industrial commodities (such as pulp and paper, petrochemicals, aluminum, etc.) which remained rather unattended during the initial years of the ISI process or, alternatively, by changing entirely the incentives regime through the opening up and de-regulation of economic activities, letting the market to decide in which direction investment should go. At such historical junction Brazil and Argentina decide to go one way - expanding even further their subsidization policies - while Chile, after the 1973 military coup, opted for the other, and proceeded to the opening up and de-regulation of the economy.

In addition to the above mentioned domestic picture we also have to take into account the impact of external disequilibrium pressures which derived from the two oil shocks of the 1970's, the increase in international interest rates in 1979/80 as well as the impact of falling terms of trade and of the significant reduction in the availability of foreign financing after the Mexican Moratorium of 1982. Put together, these local and external forces derived in a highly turbulent and unstable macroeconomic environment, certainly one which sent changing and confusing messages and incentives to individual economic agents.

In such circumstances many countries in the region were forced to devalue their currencies trying to ameliorate their external sector. Such policy pushed domestic prices upwards and this, in time, induced further disequilibrium on the fiscal side triggering off a process of financial histerisis which was only to complicate matters even more at the macro level. Although the situation varied from country to country as a result of the sequence, timing and depth, of the policies implemented as well as a consequence of the domestic and external political and financial support, each country managed to obtain to stabilize their fiscal and external accounts the region as a whole shows clear signs of deterioration in its overall economic performance together with a dramatic expansion of inflationary pressures.

Macroeconomic stabilization policies, first, and structural reform actions immediately after - such as the de-regulation and privatization of many economic activities, among others - were implemented by most countries in the region. Being far from neutral

across firms, industries or regions such structural reform policies had a significant impact upon the rate and nature of the growth process.

Resource-based processing industries suffered less than engineering intensive ones, while small and medium size family enterprises were significantly more affected than large domestic conglomerates and subsidiaries of transnational corporations.

It is only in the second half of the 1980's that the initial signs of revival in the rate of economic activity can be observed after the dismal performance of the early 1980's. The rate of expansion acquired momentum in the early 1990's when aggregate economic indicators - total and per capita GDP, gross savings and investment and exports - show symptoms of recovery (see Table 1) even though for many countries in the region the degree of macroeconomic uncertainty was still significant.

Although there are important differences between countries we can generally notice that the previously described process of structural change involves a clear departure from metalworking production and specialization - prototypical of the 1950's and 1960's particularly in the largest countries in the region. We now observe a gradual concentration in natural resource-based activities, services and non tradable sectors in general. Also, a much higher rate of participation of foreign capital in domestic production and a stronger orientation towards exports. Exports, that grew at an average rate of 5.4% per annum in the period 1980-90, have increased at 7% per annum in more recent times. Imports, on the other hand, expanded even more rapidly than exports coming close to a figure of 15% per annum in the 1990-94 period.

The fact that under the new policy regime investment, growth and exports have all recovered, and that on average the region is now attaining a better performance than in the 1980's has to be taken with great care, however. Per capita GDP growth is still well below the rate attained in the 1960s, and gross fixed capital formation in 1993 still represented a lower proportion of GDP (18.1%) than that attained not only in 1980, but also in 1970.

**Table 1: Average Growth Rates
(12 countries)**

	1950-1974	1974-1980	1980-1990	1990-1994
GDP PerCápita	2,4	2,6	-0,8	1,9
Exports	3,9	3,5	5,4	6,6
Imports	6,0	5,7	-0,8	14,4
Capital Gross Form.	6,2	6,3	-2,8	8,3

Source : ECLACs data base

If we now turn to the structure of GDP we also notice significant changes throughout the period under examination. As can be seen in

Table 2, the service sector (commerce, transportation, finance and other services) has gained participation, while the remaining sectors in the economy have lost relative share in GDP. As far as manufacturing industry is concerned the evidence shows that the sector losses participation since the 1970's even in spite of the fact that throughout those years it was growing at more than 4% per annum. The falling share of manufacturing in GDP becomes even more notorious during the 1980's and has not stopped even in recent years in which the overall rate of manufacturing growth has improved vis a vis the historical trend. Quite clearly industry is no longer playing an important role as an 'engine' of growth within the Latin American economic scenario.

Table 2: Rates of growth of different sectors of the economy.

	1950-1974	1974-1980	1980-1990	1990-1994
Agriculture	3,5	3,7	2,2	2,4
Minning	4,3	0,9	2,7	3,3
Industry	6,7	4,3	0,4	3,2
Energy	9,1	8,8	5,1	4,5
Building	5,1	5,9	-2,4	5,6
Commerce	5,9	6,0	0,2	3,7
Transport	6,0	7,6	3,3	6,3
Finnancing	6,4	5,8	2,2	3,2
Social Sector	6,2	5,8	2,2	1,5
Total GDP	5,5	5,1	1,2	3,6

Source : ECLACs data bases

In the first half of the 80s, the Latin American industrial sector fell into a major crisis, remaining virtually stagnant for almost 10 years. Its recent recovery -in the 1990's- has taken place at a rate which is still lower than the rate of expansion attained by the economy as a whole, thus confirming the fact that industry is no longer a major locus of growth in the economy.

On the other hand, after a long period in which they lost participation in GDP, the commodity-producing sectors of the economy - agriculture and mining - register a faster than average rate of expansion in the 1980's, confirming the fact that natural resources began in recent years to play a more significant role than in the past. To a large extent these are export oriented activities and their expansion tends to highlight the fact that aggregate domestic demand became less important as a source of growth than in the past and that its role as a source of dynamism has been somewhat replaced by an increasing export orientation of local economic agents. We notice in the table that sectors such as industry, building, or commerce diminished their importance while the commodity-producing sectors of the economy attain above average dynamism within the aggregate picture. We can therefore conclude that pari pasu with trade liberalization and market de-regulation

the regional production structure takes a turn towards static comparative advantages, resource-based activities, non-tradables and services.

Such relative expansion of natural resource-based activities has been associated with a major outwards expansion of the natural resource frontier exploited by Latin American countries. 'New' products have entered the export basket - such as plywood or fresh fruit and fish in the case of Chile - while traditionally exported goods have expanded quite rapidly as it is the case with soyabean oil and wheat in Argentina; green coffee, sugar cane and soyabean in Brazil, coal and oil in Colombia; copper in Chile; oil in Ecuador; bauxite, tin, steel and oil in Brazil; oil and steel in Venezuela, etc. Much of this expansion of the natural resource frontier of the region was made possible by a significant amount of public expenditure in R&D activities, carried out by State agencies during previous decades involving geological surveys, R&D activities in agricultural stations, policies and legislation inducing reforestation, etc.

Table 3: SELECTED MINING AND AGRICULTURAL GOODS
(Miles of Tons)

	1970	1980	1985	1990	1993
Bananas.	20564	21671	22270	26939	27637
Green coffee.	2170	2970	3839	3883	3629
Sugar cane	277943	356626	457703	490370	454234
Sunflower	1220	1756	3522	4035	3432
Corn	38095	45280	55771	50067	67999
Sojabean	1927	19814	27167	34325	36463
Wheat	11509	14874	20215	20922	17295
Cattle*	76	100	107	123	132
Bauxite	24045	24596	18029	29071	33739
Coal	10015	17626	28283	34730	34064
Copper	987	1654	1961	2237	2785
Tin	35588	36167	47307	61900	55600
Steel	88355	137647	149952	187254	187934
Oil	305603	334219	367265	395506	428855

* Cattle Producción : index base 1980=100

Source: ECLAC

The expansion - both in quantity and quality - of the natural resource frontier of Latin American countries has permitted, on the one hand, the rapid consolidation of raw material processing industries and, on the other, a concomitant expansion of Transport, Storing and Communication Services as well as of Electricity, Gas and Water Services, all of which experimented a strong dynamism in the 1970's and 1980's, and continued to do so in recent years due to the growing energy, transport and shipping requirements of the rapidly expanding raw material processing industries.

The previously described changes in the regional aggregate production structure obtained in association with at least four other major worrying 'stylized' features of the new scenario worth taking into account as they pose important new questions for the future.

The first such feature concerns the rate of growth itself and its relationship with the expansion of exports. 'Export-led' growth ideas have taken significant weight in the current economic debate throughout the region. It is important to notice, however, that per capita GDP is growing at just 1.9% per annum, despite exports growing in physical terms at nearly 7%. These figures open some doubts as to the extreme a priori faith policy makers are currently placing upon 'externally-induced' sources of growth.

A second source of concern derives from the fact that imports - that fell quite significantly in the 1980-85 period (both in value and physical terms) - have been growing much more rapidly than exports over recent years. As a result of the above, the industrial balance of trade - which was positive in the mid and late 1980's - turned up to be significantly negative in 1993 and thereafter.

Thirdly, there is the employment question. The recent rapid expansion of labour productivity - particularly in the industrial sector - has been attained through massive displacement of labor. Countries such as Argentina or Brazil appear today in an all-time historical peak in their unemployment rates and with little expectation of improving along this front in the forthcoming future.

Fourthly, and finally, environmental equilibrium issues are becoming an increasingly important topic in the emerging public policy agenda of the region. Such issues have not so far been treated in an adequate way by local institutions and will become increasingly important as the resource-based orientation of the model gets stronger through time.

Having so far examined the overall aggregate picture we now turn to the specificities of the region's industrial sector.

III.2. Structure and behaviour of the industrial sector.

a. The various stages of the industrial re-structuring process

Over the last twenty years manufacturing industry in Latin America has gone through various different stages of development in which the rate of growth, the production structure and the pattern of insercion into the world's market place varied a great deal.

As we have previously seen, in the second half of the 1970's the rate of industrial growth for the region as a whole fell down significantly, becoming in fact lower than in the fifties and sixties. (Table 4). The average, however, prevents us from seeing that there are important inter-country differences in this respect. On the one hand, manufacturing industry in Argentina, Chile and Peru shows early signs of stagnation in the 1970's while, on the other, the dynamics of industrial expansion in still maintained in the late 1970's in Brazil, Ecuador, Guatemala and México.

As a result of a growing external inbalance and of a lower rate of expansion of domestic demand many countries in the region began to experiment with trade liberalization measures in the late 1970's. Such measures gradually induced local firms to search for foreign markets.

TABLE 4 : AVERAGE ANNUAL GROWTH RATES OF INDUSTRIAL VALUE ADDED.

	1950-1974	1974-1980	1980-1990	1994-1990
ARGENTINA	4.9	-0.6	-1.4	6.9
BOLIVIA	3.7	3.4	-0.6	3.3
BRASIL	8.7	6.7	-0.2	2.8
CHILE	4.4	1.2	2.6	6.3
COLOMBIA	6.7	4.0	2.9	3.9
COSTA RICA	8.7	5.5	3.8	5.7
ECUADOR	6.2	10.2	-0.8	5.7
GUATEMALA	6.1	6.1	-0.1	2.8
MEXICO	7.4	6.2	2.0	2.3
PERU	7.0	1.8	-1.9	5.6
URUGUAY	2.4	4.9	-1.0	-1.3
VENEZUELA	7.8	5.0	1.9	1.8
TOTAL	6.7	4.3	0.4	3.2

Source: own elaboration on the basis of ECLAC's PADI Programme.

The counter-cyclical reaction was by no means insignificant. Industrial exports grew from U\$S 19.2 mill. to 41.8 mill. U\$S dollars between 1974 and 1980. Imports, however, grew even faster, with the consequence that the sectorial balance of trade became negative for the region taken as a whole. (Table 5).

TABLE 5: LATIN AMERICA: INDUSTRIAL EXPORTS AND IMPORTS (Mill. U\$S dólares at current prices)

	1974	1980	1990	1994
EXPORTS	19262	41894	70407	123442
IMPORTS	28476	67284	70758	163315
COMMERCIAL BALANCE	-9214	-25390	-351	-39873

Source: own elaboration on the basis of PADI, ECLAC.

Beginning in 1980, and for the rest of the decade, manufacturing production entered into a period of stagnation for the region as a whole and of severe contraction, for countries such as Argentina, Uruguay and Peru. In many cases industrial output in 1990 was lower than in 1980.

Given the fall in domestic absorption the external sector of the economy became the more dynamic component of global demand. Reacting to such set of circumstances many firms reoriented their activities towards foreign markets and manufacturing exports expanded quite rapidly from U\$S 41.8 mill. in 1980 to U\$S 70.4 mill. in 1990. But this time imports behaved quite differently than in the 1970's. In fact, and as a consequence of a much lower rate of economic growth, they also expanded at a lower pace and the external trade deficit in manufacturing products became significantly smaller.

It should be understood, however, that such improvement in the sector's external account takes place in the context of a rapidly changing set of internal and external circumstances which determined that the balance could not be maintained for long. Three aspects point out as to the nature of the emerging new circumstances: Firstly, macroeconomic stabilization policies induced a major contraction in domestic demand. Secondly, the debt crisis - triggered off by an increase in the international interest rate as well as by the contraction of external financing - strongly deteriorated the regional macroeconomic position and, thirdly, the rapid outwards expansion of the international technological frontier - due to the discovery and rapid diffusion of microprocessors and numerically-controlled production processes and new product designs - significantly worsened the region's technological gap vis a vis the world's best practice frontier.

Taken together such circumstances pushed the industrial sector into a deep structural crisis. Domestic demand contracted and the external competitive capabilities of many firms and industries rapidly eroded. Negative rates of growth obtained during the first half of the 1980's. Thousands of manufacturing firms closed down during those years with unemployment reaching rates previously unheard of in the region. It is only late in the decade that such situation starts to revert and industry begins to grow once again. But it is important to understand that this time the expansion takes place in terms of a significantly changed production structure and on the basis of a production organization model which appears to be quite different from the one firms employed in the 1960's and 1970's. (This topic will be further discussed later on in the paper).

The first half of the 1990's shows a clear revival in the region's rate of manufacturing growth. The average annual rate of expansion for the region as a whole is 3,4% between 1990 and 1994. This is above the average overall performance of the 1980's but it is still lower than the rate of expansion of the period 1974-1980 which was 4,6% per annum. With the notable exception of Argentina, Chile, Perú and (marginally) Costa Rica, industry still grew less rapidly in most countries of the region in the first half of the 1990's than in the second half of the 1970's.

Exports continued to expand fast - in value and in physical terms - but this time both the expansion of domestic demand and the appreciation of many local currencies induced a very rapid increase in imports with a revival of the external trade deficit. Output growth comes this time associated with a rapid increase in labour productivity which for the region as a whole attains the high ratio of 8,0% per annum between 1990 and 1993 (Table 6). It is important to notice, however, that such an improvement in labour productivity comes along - with the exception of Chile - without a major expansion of investment. Rather - and particularly so in Argentina or Brazil - it derives from drastic reductions in employment and as a result of a growing rate of utilization of organizational technical changes of a 'disembodied' and labour saving nature. In other words, with the exception of the Chilean case, labour productivity growth in the first half of the 1990's is attained through a significant expulsion of labour from the industrial sector. Whereas industrial employment grew until 1980, and slightly contracted throughout the decade, it fell at a 4.7% per annum in the first three years of the 1990's. In absolute terms employment in 1993 was about similar to 1974 but during the same period industrial output had grown nearly 50%.

TABLE 6: Average annual labour productivity growth rates for the Latin American region.

	1974-1980	1980-1990	1990-1993
RATES	1,6	1,0	8,0

Source: own elaboration on the basis of ECLAC's PADI Programme.

Summarizing: manufacturing industry in Latin America seems to be coming back from the impact of macroeconomic stabilization and trade liberalization policies of the sort applied by different governments of the region in the late 1970's and early 1980's. It now exhibits renewed capacity for growth in an increasing number of countries and considerable success in terms of labour productivity and exports. On the other hand, manufacturing imports continue to expand at a very rapid pace producing an increasingly negative external balance of trade for the sector as a whole. A large fraction of such deficit comes from metalworking and capital goods producing industries as well as from the electronic sector, both of which have lost competitiveness after trade liberalization. On the other hand, the sector's reduced capability for labour absorption also constitutes a subject for concern.

b. The re-structuring of manufacturing production towards raw-material processing industries

An examination of the industrial growth process of the main countries in the region over the last twenty years shows a relative expansion of natural resource-based processing industries together with a contraction of metalworking sectors producing capital goods and consumer durables.

As we can see in Table 7 the composition of manufacturing value added in 1974 reflects an inter-industry pattern of specialization in which a major role was played by the 'metalworking complex' - an aggregate that brings together a set of industries producing automobiles, capital goods, consumer durables, agricultural equipment, etc. These are industries which make intensive use of product design engineering capabilities as well as of skilled manpower in the machining and assembly of components, parts and subassemblies. In the two technologically more developed countries in the region - Argentina and Brazil - these industries accounted for nearly 30% of industrial production while in various others - such as Chile, México or Perú - where the industrial fabric did not have a similar degree of complexity such sector represented nearly 20% of manufacturing output.

It is important for us to understand the highly idiosyncratic conditions in which the metalworking sector developed in the early stages of the import substitution model. Starting from rather poor 'in house' technological capabilities many small size, family-

owned, industrial firms, gradually developed by coping outmoded foreign product designs, carrying out a significant amount of 'reverse engineering' efforts in plant and supplying themselves with selfconstructed pieces of machinery, quality control instruments, etc. Pari pasu with the above they also accumulated a significant stock of engineering skills and technological capabilities of a 'disembodied' nature which complemented the gradual evolution of their hardware. At a more global, societal level, the previously described process entails no less than the cumulative development of a local industrial 'culture' which was previously lacking in the region. Such process required the diffusion and absorption of manufacturing practices, quality control standards, tolerance limits, subcontracting norms, etc. which domestic firms were not previously accustomed to use. Pari pasu with the expansion of the above mentioned skills and capabilities the industrial organization model thereby developed accumulated very many sources of strength but also a large number of limitations and weaknesses which were to affect its long term competitive capabilities later on, when countries moved towards trade liberalization in the late 1970's and early 1980's. Among such limitations we should mention : small scale of plants, a high degree of vertical integration, ad hoc and quasi-artesanal plant 'lay-outs', imperfect technological information, small investment capabilities, etc.

The above mentioned limitations of the industrial organization model became all the more notorious in the second half of the 1970's when a new generation of capital goods and consumer durables featuring numerical control and digitalization began to be traded internationally and when the principles of 'flexible manufacturing' became part of the 'best practice' techniques used by industrial firms at a world-wide level. The technological gap of Latin American metalworking firms increased quite considerably in a matter of just a few years making their competitive position much more difficult to sustain as countries proceeded towards trade liberalization.

Our previous discussion suggests that even in spite of the fact that many firms and industries managed to attain a rapid rate of productivity growth and to accumulate a significant amount of technological learning during the ISI period on aggregate these countries could not satisfactorily close the gap vis a vis a rapidly evolving international technological frontier. After a successful period - the 1960's and first half of the 1970's - in which the relative gap between the region and the world experienced a relative reduction, the gap started to grow once again when the international technological frontier moved outwards in terms of numerically-controlled products and production processes. This was particularly true in the metalworking field where a new vintage of more sophisticated products and production processes diffused internationally in a rather short period of time beginning in the late 1970's .

It is in such context that countries such as Argentina, Brasil, Mexico o Colombia decided further to carry their import substitution strategy introducing new fiscal subsidies for the expansion and 'deepening' of their raw material processing industries, some of which were already established as from the 1950's and 1960's but were significantly modernized and upgraded in the late 1970's and early 1980's. Such fiscal subsidies induced the erection of a new vintage of highly capital intensive 'state of the art' continuous flow processing plants for the production of pulp and paper, petrochemicals, steel, aluminum, vegetable oil, fishmeal, etc. These new investments belong in what has been called the 'second phase' of the import substitution industrialization strategy which clearly involves a process of 'capital deepening' both in terms of the industries chosen for expansion as well as in terms of the production techniques and plant 'lay-outs' selected for such investments.

Chile appears as a quite different case from the previously mentioned ones in as much as it expanded in the some direction - i.e. into raw material processing industries - but it did so not on the basis of conventional fiscal subsidies - as it was the case in Argentina, Brazil or Colombia - but through the opening up of its economy to external competition. The vitues of the Chilean example should not, however, be exaggerated as it is quite clear that strong subsidies were given by the State to the private sector throughout the 1960's and 1970's inducing the expansion of the natural resource base upon which some of the newly expanding raw material processing plants (pulp and paper, fishmeal) were to operate as from the late 1970's onwards. Notwithstanding the above, it is still true that in the Chilean case the expansion of raw material processing industries came about more as a result of market forces than as a consequence of conventional fiscal subsidies as it was the case in Argentina or Brazil.

TABLE 7: STRUCTURE OF INDUSTRIAL VALUE ADDED IN VARIOUS LATIN AMERICAN COUNTRIES.

	ARGENTINA			BRASIL			CHILE			COLOMBIA			MEXICO			PERU		
	74	90	93	74	90	94	74	90	94	74	90	94	74	90	94	74	90	94
I	17,1	14,3	17,6	23,3	22,9	23,6	14,0	10,2	10,2	9,6	9,6	10,6	13,3	12,3	13,9	9,2	6,2	5,2
II	10,5	8,5	13,5	7,7	7,0	8,7	6,9	2,3	2,3	4,5	4,3	6,9	6,0	9,5	10,8	8,3	5,3	3,6
I+II	27,5	22,8	31,0	31,0	29,9	32,3	20,9	12,5	12,5	14,0	13,9	17,5	19,3	21,8	24,7	17,5	11,5	8,8
III	20,3	24,3	21,0	14,6	15,2	14,9	26	33,8	36,6	29,2	31,1	29,0	29,9	25,8	25,7	27,6	31,7	32,6
IV	16,1	22,4	16,6	22,3	24,4	25,8	24,9	21,5	19,3	19,5	20,0	20,8	18,3	21,0	20,8	11,8	13,5	12,6
III+IV	36,5	46,7	37,6	36,9	39,7	40,7	50,9	55,3	56,0	48,7	51,2	49,8	48,2	46,8	46,5	39,4	45,2	45,2
V	36,0	30,5	31,4	32,1	30,5	27,0	28,2	32,2	31,5	37,3	34,9	32,7	32,5	31,4	28,8	43,1	43,4	46,0
TOTAL	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
ICE	0,33			0,27			0,63			0,33			0,27			0,62		

TABLE 8 IMPORT COEFFICIENTS FOR SOME LATIN AMERICAN COUNTRIES.

	ARGENTINA			BRASIL			CHILE			COLOMBIA			MEXICO			PERU		
	74	90	92	74	90	94	74	90	94	74	90	94	74	90	94	74	90	94
I	10,8	13,7	48,9	22,8	17,0	22,6	119,9	239,2	233,2	59,9	97,9	113,4	33,7	71,8		93,3	95,9	216,1
II	2,4	4,8	22,8	8,9	6,5	17,9	100,5	231,3	259,8	55,8	44,2	118,8	29,5	30,2		29,3	36,9	187,0
I+II	7,8	10,3	36,4	18,1	13,8	21,2	114,1	237,5	239,4	58,5	76,9	115,6	32,0	50,6		71,8	71,4	206,1
III	0,5	0,2	2,8	2,3	3,0	5,7	37,2	5,6	7,4	3,4	2,2	5,6	2,5	6,4		4,7	5,1	6,1
IV	26,7	8,9	24,1	27,3	7,2	10,7	50,9	60,8	63,8	48,2	45,2	47,1	17,8	20,3		29,3	19,7	36,6
III+IV	10,5	3,3	10,6	15,9	5,4	8,8	43,5	25,5	26,3	20,3	18,8	22,9	7,9	12,0		13,5	8,9	13,7
V	2,7	1,9	8,3	3,1	2,8	5,2	15,8	23,3	37,4	6,1	6,5	13,1	3,6	8,6		3,6	2,3	6,2
TOTAL	7,2	4,1	16,6	13,1	6,7	11,5	48,3	54,4	60,4	20,9	23,9	35,9	11,0	19,1		15,8	10,3	19,9

Source: own elaboration on the basis of ECLAC's PADI Programme.

Where :

- I : METALWORKING INDUSTRY (excluding automobiles)(CIIU 381, 382, 383, 385)
- II : TRANSPORT EQUIPMENT (CIIU 384)
- III : FOODSTUFFS, BEVERAGES AND TOBACCO.(CIIU 311, 313, 314)
- IV : INDUSTRIAL COMMODITIES (CIIU 341, 351, 354, 355, 356, 371, 372)¹
- V : 'TRADITIONAL' INDUSTRIES (CIIU 321, 322, 323, 324, 331, 332, 352, 361, 362, 369, 390).

As a result of the above mentioned policies - conventional subsidies in one case and trade liberalization in the other - the share of groups III and IV - foodstuffs and industrial commodities - increased in Argentina from 36,5% to 46.7% of total manufacturing production between 1974 and 1990. In Brazil that same coefficient went from 36,9% to 39,7% over the same period, while in Perú it jumped from 39,4% in 1974 to 45,2% in 1990; In Colombia the change was from 48,7% to 51,2% while in Chile it went from 50,9% to 55,3% in the same time interval. Even in Mexico, where the relative weight of the foodstuffs industry is rather small, the incidence of the group of industries producing industrial commodities moved up from 18,3% in 1974 to 21,0% in 1990. Thus, the shift towards foodstuffs and raw material processing industries constitutes a fairly generalized phenomena across the region after the mid-1970's.

Contrary to the above, it is the metalworking sector the one that loses participation in manufacturing production in the 1974-1990 period. In some cases - Chile, for example - it does so in a very dramatic way, whereas in others - Brazil - the contraction is less severe.

The new raw material processing plants erected during the late 1970's and early 1980's brought about a rapid expansion of exports. In the case of Argentina exports of industrial commodities increased from 12,8% of total shipments in 1974 to 25,3% in 1990; in Brasil they did so from 7,1 to 35,4% over the same period. In the case of México from 23,8% to 27,8% while in Colombia they moved up from 15,7% to 22,7% . In Chile, instead, is the foodstuffs the one that expands its participation in exports, jumping from 13,8% in 1974 to 38,0 % in 1990.

Against the success story told by the rapid expansion of exports in the foodstuffs and raw materials processing industries we also have a failure story told by the metalworking and capital goods producing industries which, with the single exception of Brazil, found it increasingly difficult to compete with imported

¹ In the Chilean case cooper has been excluded from CIIU 372.

substitutes. Excluding the case of Brazil, which improves on this account after 1974 and exhibits superavit in its trade accounts in this field up until 1994, the region's external balance of trade in this field shows a continuous deterioration after the liberalization of trade.

Beginning in 1990 the data uncovers a new theme worth exploring, even if briefly, before ending this section. With the exception of the Chilean case in all of the other countries hereby examined the automobile industry stages a new period of very rapid growth, covering the years 1990-1994. In actual facts most plants in the auto industry have recently gone through a deep re-structuring process associated to a significant change in market strategy from the part of the main companies hereby involved. From an inwards oriented industrial organization model in which firms used to operate with a high degree of vertical integration, selfsupplying themselves with parts, components and subassemblies and carrying out for such purpose a significant amount of 'in house' 'adaptive' engineering efforts, we have now moved towards production facilities that operate on the basis of a much higher import content, 'outsourcing' a large number of components and subassemblies and coming close to the 'maquila' type industrial organization model in which much lower value added and local engineering content is involved.

In conjunction with the above, and particularly so in the cases of Chile, Argentina and México, the major contraction of the metalworking sector producing capital goods, agricultural machinery, machine tools, etc. involves a concomitant reduction of local R&D activities in product design engineering as well as in production planning and organization, all technologically sophisticated efforts with a significant impact upon the development of domestic technological capabilities. Instead of carrying out those activities locally firms now appear more inclined to operate as licensees of foreign firms, assembling locally some of the products of a wider product line and importing the remaining items of such line to be sold locally through their commercial network. In the case of Brazil the destruction of domestic engineering capabilities looks somewhat less dramatic than in the previously mentioned countries but yet the general direction of the restructuring process looks very much the same.

c. Inter-country differences in industrial structure and performance

Our previous discussion concerning inter-country differences in the response to trade liberalization unveils a major issue so far not examined. In spite of the fact that all of the countries in the region seem to be going through a somewhat similar industrial restructuring process in which raw material processing industries have taken the lead in the growth process whereas metalworking and capital goods producing industries have lost relative share and

technological stammina, we should not underscore the fact that there are large inter-country differences in the way such process is actually taking place. Such differences become rather important when we try to evaluate the long term sustainability of the structural transformation now under way. An index of Structural Change ² (ICE) included at the bottom of Table 8 indicates that Chile is the country which has undergone more structural transformation vis a vis the ISI period whereas Brazil or Mexico are the countries which have changed the least respect to their previous production structure. Argentina and Colombia come somewhere in between these two extreme situations.

As previously suggested, Table 7 confirms the fact that Brazil is the country which better has managed to preserve its pre-existing metalworking and capital goods industries which are relatively intensive in engineering services and particularly important as a source of development of domestic technological capabilities. In opposition to the case of Brazil such industries suffered a major set back in Chile and an also significant contraction in the case of Argentina, which is the only country in the region which had managed to develop a metalworking industry of the same degree of technical sophistication and complexity as the Brazilian one. From this point of view the evidence seems to suggest that even within a general dynamics in which countries tend to turn back towards natural resources and static comparative advantages, large inter-country differences still prevail with Brazil having been able to preserve a larger fraction of its previously developed national technological and engineering capabilities than some of the other countries in the region.

Inter-country differences are also important in relation to the functioning of the external sector of the economy. Import coefficients -shown in Table 8- point out towards interesting differences that should be noted. On the one hand we have the cases of Chile y México where both import and export coefficients increased quite significantly during the period under examination. On the other hand, Argentina, Brasil and Colombia describe three different patterns. In the first case it was the import coefficient the one that increased more. In Brazil the export coefficient shows a significant expansion but not so the import coefficient while, finally, Colombia, managed to expand its export capabilities but maintained an import coefficient which was already high as from the beginning of the period under consideration. The final message of these figures appears to be that there are large inter-country

² ICE is an index produced by UNIDO measuring changes in industrial structure. It is based on the observed changes in the relative weight of certain sectors within aggregate manufacturing value added. It does not therefore measure if metalworking or raw material processing industries are becoming more important through time but rather if changes in structure have been stronger or weaker on average.

differentials in their external balance of trade in manufacturing products. It goes from positive to negative in Argentina and Chile, shows a large superavit in Brazil, deteriorates somewhat in Colombia and does so even more in the case of México.

The explanation of the previously described differences comes, in our view, from differences in macroeconomic management - exchange rate policies, commercial and financial policies, etc - but also from structural and institutional variables. From this perspective it seems reasonable to believe that the higher degree of technological maturity attained by the Brazilian metalworking and capital goods industry, its larger domestic market and the longer and deeper State support it managed to obtain during the ISI period probably explains why such industry has been more capable of survival in the Brazilian context than anywhere else in the region, even on the face of recent trade liberalization efforts. Contrariwise, in the case of Chile the combination of trade liberalization, currency appreciation, a relatively small domestic market, the lack of industrial policies inducing the expansion of the metalworking and capital goods industry and the large and increasing availability of high quality natural resources have all played a significant role in inducing a relatively early process of de-industrialization in the metalworking field and of restructuring towards industrial commodities and raw material processing industries.

IV. MESO AND MICROECONOMIC FEATURES OF THE NEW INDUSTRIAL SCENARIO.

We have so far carried out the examination of the Latin American industrial re-structuring process of the 1980's at a fairly high level of aggregation, showing that a major shift has taken place in the composition of manufacturing output as a result of macroeconomic stabilization and structural reform policies. Raw material processing industries have fared much better than labour intensive and engineering intensive ones and have managed to gain relative participation in aggregate industrial output. Textiles and metalworking production have been the industrial sectors that more strongly suffered the impact of trade liberalization and market deregulation, significantly contracting in their volumen of production and in their level of employment. The rate of company mortality in both such sectors has been quite high, particularly among small and medium size family enterprises, as we shall see throughout the present section.

As indicated in the introductory paragraphs of this paper the socio-economic re-structuring process of the 1980's can be examined at the macro level but can also be approached at a much more desaggregated level, i.e. looking at changes in institutions and market structure and performance for individual industries or at

production planning and the organization of work at the level of particular enterprises. Stories of success and failure, of adequate or inadequate adaptation to the new 'mode du regulation', could be told at both such levels and a major question of coherence arises between our macro, meso and micro 'reading' of the observed facts. In this section we turn towards meso and micro ways of looking at the issues so far examined.

In order to proceed to such more disaggregated level we have chosen for examination two specific topics. Firstly, macroeconomic stabilization and structural reform programmes seem to have been far from neutral when we consider their impact across different types of firms - i.e. small and medium size family enterprises, TNC's, large domestic conglomerates, etc. Both on account of an inherent bias in such programmes in favour of private, rather than public, production, as well as as a consequence of differences in the adaptation capabilities of enterprises of different type, recent changes in policy regime have in actual facts functioned as a strong non-neutral selection mechanism weeding out certain type of firms from others and favouring an increase in the degree of economic concentration throughout the production structure of the various countries of the region. Secondly, changes in the organization of work at the individual firm level have had a strong labour saving bias, affecting both the level and composition of employment. We now briefly consider both such topics.

IV.1. The changing role of SME's, MNCs, domestic conglomerates and public enterprises in manufacturing production.

Manufacturing firms normally belong in one of four different groups: 1.Small and medium size enterprises, many of them family-owned, 2.Large domestic incorporated firms and conglomerates, 3.Local subsidiaries of transnational corporations and, 4.Public enterprises. Significant differences frequently prevail among them in aspects such as factor intensity and the organization of work, management practices, access to factor markets, technological capabilities, etc. Recent changes in policy regime have been far from neutral in their impact across these broad categories of manufacturing enterprises, triggering off a process of business concentration.

Consider first the vast universe of small and medium size firms - a large number of them family-owned - strongly represented in the production of goods such as shoes, garments, furniture or machine tools. A high rate of firm mortality in all of these industries can be observed during the 1980's, as a result, on the one hand, of the severe contraction in domestic demand induced by macroeconomic stabilization programmes (Cepal, 1996) and, on the other hand, by the mounting difficulties many SME's faced to adapt themselves to the new policy regime as a result of their imperfect access to

capital and technology markets and of their inadequate understanding of the complexities of the new competitive climate. (A.Misala, 1992; F.Boscherini and G.Yoguel, 1996). Starting from somewhat outmoded product designs, from production processes and plant facilities that still maintained much of pre-'flexible manufacturing' revolution period, and from a managerial structure which found it very difficult to assimilate the complexities of the new production organization principles, many SME's found it very difficult to survive in the new competitive atmosphere of the 1980's. (Castillo & Maggi, 1995; Kosacoff, 1995, etc.). Take-overs, mergers and acquisitions as well as an unduly high rate of bankruptcies in the above mentioned industries in the mid-1980's account for the fact that in many cases as much as a quarter of the firms previously in business were forced to close down their operation. Many of those that managed to survive did so by significantly altering their production and financial behaviour relatively abandoning their engineering and production activities and turning more into financial and speculative short term ventures (Misala, 1992) or, alternatively, by becoming subcontractors of large domestic or international firms (A.Posthuma, 1995) or by specializing in small market niches. Only a reduce number of SMEs has as of today significantly upgraded their technological capabilities through the imports of capital goods (J.Lucangelli, 1996) and the licensing of new product designs.

There is then the group of large domestic conglomerates, primarily involved in raw material processing industries such as pulp and paper, vegetable oil, fishmeal, steel, etc. Contrary to the experience of SME's local conglomerates managed to expand quite considerably in absolute and relative terms during the course of the 1980's. (Bisang, 1995; J.Garrido, 1994). A large number of highly capital intensive, 'state-of-the-art' raw material processing plants, was erected in the region during the past decade, most of them by local conglomerates. These plants benefited from generous fiscal subsidies and other forms of public support (R.Bisang, G.Burachik and J.Katz, 1996), specially so in the cases of Argentina and Brazil. As explained in our previous section many of these plants were originally planned for the domestic market - particularly in the cases of Argentina and Brazil, and less so in the case of Chile (A.Diaz, 1995; G.Stumpo, 1995) - and turned later on into exports as a result of the dramatic contraction of the local market which followed the macroeconomic stabilization efforts of the 1980's. (G.Stumpo and R.Bielchowski, 1996). In more recent times many of these local conglomerates have entered into strategic alliances with large external banking houses and international subcontractors for the purpose of participating in the privatization of public enterprises, thus gaining an even stronger position within the domestic production fabric.

A third major group of firms is that of local subsidiaries of large multinational corporations, accounting for the lion share of production in industries such as automobiles, petrochemicals,

pharmaceuticals, etc. The flow of direct foreign manufacturing investment towards Latin America contracted severely throughout the 1980's with major TNCs abandoning the Argentinian, Chilean or Colombian markets -less so in the case of Brazil - only to return to them towards the end of the decade or beginnings of the 1990's. Their return, however, has in many cases been on the basis of a new much more globally-oriented production organization perspective, i.e. with an outward-looking strategy that is taking for granted that regional economic integration schemes such as Mercosur or Nafta have become permanent features of the new institutional landscape to which they have to adapt. The privatization of public assets, and the purchasing of certificates of the external debt in secondary markets (M.Fuch, 1990; Kosacoff et.al.1994) have provided a vast array of new opportunities for TNCs to allocate fresh funds in the Latin American region in recent years, rapidly expanding their share of industrial and total GDP.

Fourth, and final, we also have a group of large public enterprises, involved in fields such as oil destilleries, minerals, steel production, etc. Most countries in the region have proceeded to the privatization of many of these companies in recent years, in some cases mainly for short term fiscal purposes while in others with a more explicit objective of improving microeconomic efficiency through the strengthening of competition. In some cases these actions have proved highly successful while in others they have turned into dramatic failures, but regardless of the final outcome of each particular operation it is clear that their general consequence has been that of dramatically reducing the relative share of public enterprises both in manufacturing production as well as in total GDP.

Each of these four groups of companies has been confronted with very different challenges and opportunities during recent years as a result of changes in the macro policy regime. Their adaptation capabilities to the new environment have been quite different and as a consequence of that their relative performance has changed considerably in recent times. SME's and public firms have lost ground in most countries of the region and the degree of business concentration has increased significantly both in individual sectors of the economy as well as at the aggregate level. As much as one third of manufacturing output is presently under the control of some two dozen large domestic conglomerates in almost all of the countries under examination. (Paredes & Sanchez, 1995; Bisang, 1995; Obstchatko,1996).

IV.2. The factor saving bias of recent changes in industrial structure and in production technologies.

The industrial re-structuring process we have so far been examining has taken place within the context of a highly unstable and turbulent macroeconomic environment. One of the outstanding features of the 1980's for all of the countries in the region has

been the dramatic contraction in the overall rate of gross investment, both private and public. In spite of the above, however, the rate of investment in specific industrial fields remained rather high, in particular in raw material processing sectors where many new large 'state-of-the-art' plants were erected and brought up to capacity during the course of such decade. We have seen that, as a consequence of the above, the relative weight of capital intensive industries increased quite considerably within aggregate manufacturing production while that of labour and engineering intensive sectors lost relative participation during the course of time.

The newly erected plants demanded very little new employment. Normally they constituted highly automated, 'machine-paced' raw material processing facilities, where production organization was highly standardized, no product engineering design was involved and hardly any unskilled labour was required. (Obstchatko, 19996)

On the other hand, the re-structuring of production organization in labour and in engineering intensive industries - shoes, garments, textiles, machine tools, automobiles, etc.- involved a major reduction of blue collar staff, as well as of production workers at the shop-floor level, as companies proceeded to de-verticalize their operation, outsourcing and importing a much higher proportion of their intermediate inputs, components and subassemblies. Such process involved the introduction of many new forms of 'disembodied' technical change of a labour saving nature. Many firms realized that they could turn out the same, or even a larger volume of output, with as little as two thirds or even one half of their previously employed labour force. Labour productivity expanded at a very rapid pace while industrial unemployment became a major source of concern, particularly so in countries such as Argentina or Brazil. (Katz et.al. 1996). In some of the countries in the region this process obtained together with a weakening of the trade union structure and with many institutional changes in the labour market which have made labour relations much more flexible than in the past. (Gerschunoff and Torre, 1996).

On the whole we can think of three quite different entrepreneurial attitudes as far as the reorganization of production is concerned. (Kosacoff, 1995). On the one hand, we can identify the case of proactive firms where adaptation to the new policy environment meant investment in new production facilities, significantly changing both product, process and organizational technologies. In addition to the previously mentioned cases of the raw material processing industries also the restructuring of the Mexican automobile industry constitutes another important example of this type of firm behaviour. (Sheiken and Mankita, 1994). A second group is formed by those firms that adopted a 'defensive' attitude on the face of the new circumstances and responded in terms of a small amount of new investment in hardware but with many 'disembodied' changes in production organization and

outsourcing. (Kosacoff et.al., 1996). In both these cases the capital/labour ratio has expanded - much more in the first group than in the second - and so did labour productivity. Capital/labour substitution and labour saving technical changes play an important role in both situations. (Katz, 1996).

There is yet a third case, significant in number, of firms which have not done much in terms of adaptation to the new environment and where decay and company mortality have been large and will continue to be so in the future. Inertia, imperfect information, lack of access to factor markets, etc. appear as major explanations of entrepreneurial attitudes in this case.

Summarizing, we can envisage an yet incomplete and imperfect transition to a new production organization scenario, economically more concentrated than in the past, scarcely offering new employment opportunities, and growing rather fast in terms of labour and total factor productivity. All this is taking place in an industrial structure which was well behind international best practices and productivity standards. Can we expect the previously described dynamics to evolve into a gradual reduction of the international productivity gap? And, if so, what inter-industry differences can we expect to prevail? These questions constitute the subject matter of our last section.

V. THE REGIONS'S RELATIVE PRODUCTIVITY GAP.

Micro and sectorial evidence suggests that the Latin American industrial structure is indeed undergoing significant changes in capital intensity, in the organization of work at the individual firm level and in the rate of technological progress. Casual observation indicates, however, that such changes have so far been very unevenly distributed among firms and industries and that the industrial structure as a whole seems to be far from having concluded its transition towards a more modern and 'world-class' status. Under such circumstances it seems quite reasonable to ask ourselves if there is any evidence at all suggesting that, on aggregate, or in particular blocks of manufacturing production - i.e. in the raw material processing industries, in metalworking production, etc. - the relative productivity gap between the Latin American industrial sector and, say, its US counterpart, is narrowing through time or not?. In this final section of the paper we explore such question through the use of a rather simple econometric model with which we try to identify, and compare, statistically significant discontinuities in the long run labour productivity performance of manufacturing production in the US and in the Latin American region for the period 1970-1995.

For such purpose we examine the stochastic properties of the time series hereby involved, studying their 'generation' process through a concomitant utilization of recursive least squares estimates and

sequential Chow Tests capable of locating 'endogenous structural breaks' both in the level and trend of each series.

Such methodology was applied to time series for labour productivity growth for the US and Latin America covering both Manufacturing Production as a whole as well as four different aggregates : Foodstuffs, Industrial Commodities, Machinery and Equipment and Labour Intensive (or traditional) non-durables. The order of integration of the series are based on Augmented Dickey-Fuller (ADF) Tests with variable lags for each series and a deterministic trend. We could not reject the null hypothesis that the series are integrated of order one. We could therefore proceed on the basis of the rate of growth of labour productivity, estimating the following model:

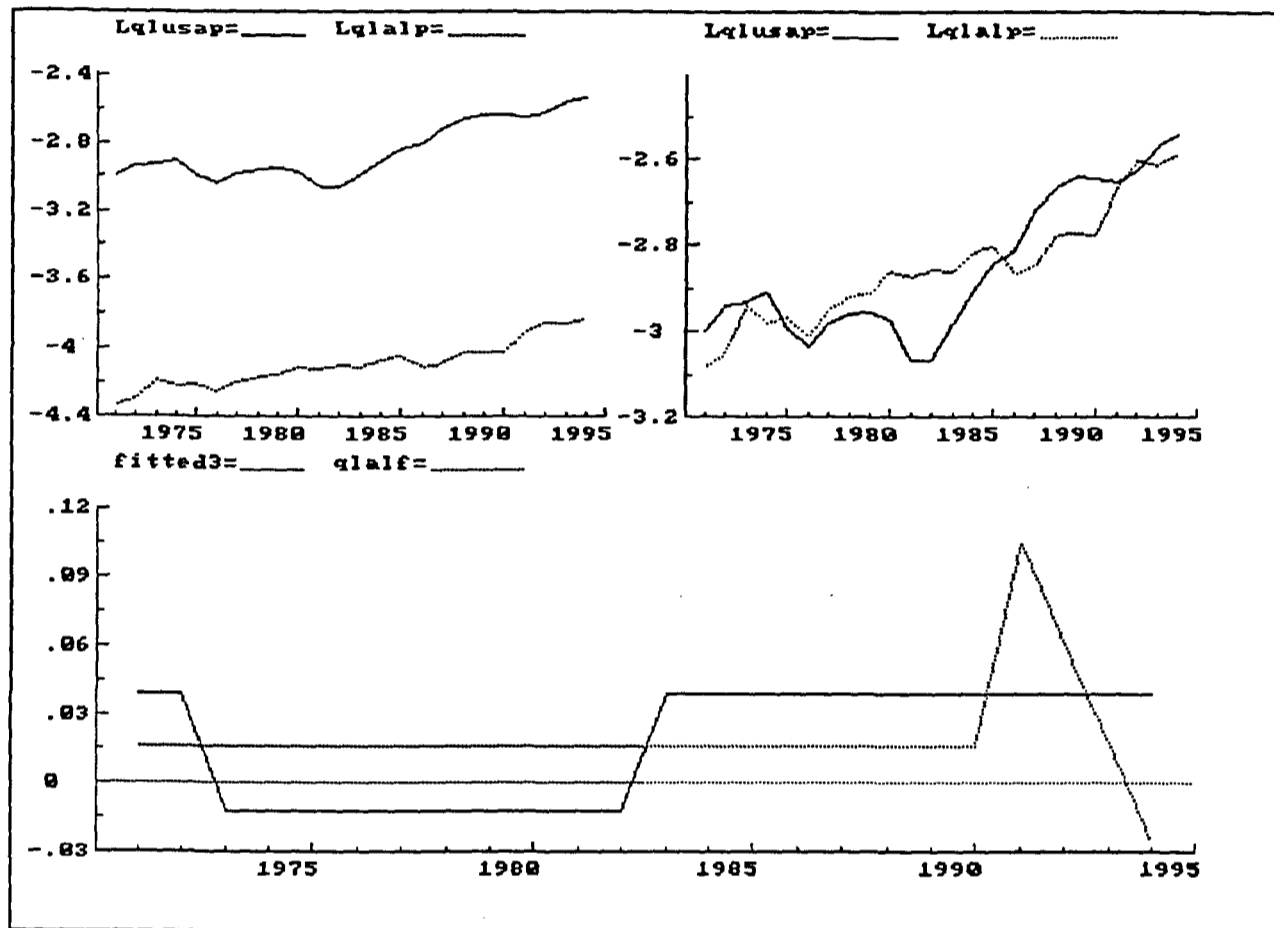
$$(1) \text{Dln}(Q/L)_{ijt} = \alpha + \beta \text{Trend} + \sum_{h=1}^K [\gamma_h D_{ijh} + \delta_h (D_{ijh} * \text{Trend})] + e_{ijt};$$

Where i = sector
 j = region (Latin America o USA)
 D_{ijh} = Dummie that takes a value of 1 if evidence of structural change in h period exists.
 K = Number of possible identified structural change
 e_{ijt} = $N(0, \sigma^2)$

V.1. 'Catching up' or 'lagging behind' ?. The 1970's, 1980's and 1990's.

Figure 1 exhibits the results obtained for running the above model for Total Manufacturing Industry, comparing US and Latin American labour productivity growth for the period 1970-1995. In the upper left corner of the Figure we present the estimated levels for the logarithms of the above mentioned variable for both aggregates. On the upper right corner the same series are presented but with a convenient change of scales, so as to make their co-evolution easily perceived by the reader. Finally, in the lower part of the Figure we show both 'stylized' series identifying statistically significant and long term permanent 'discontinuities' in their co-evolution.

Figure 1:



We notice from the figures that in 1970 Latin American industries only managed to obtain just about one quarter of US average labour productivity. After 1973 a slow process of convergence starts which continues up until 1983, approximately. It is the US industrial sector the one that exhibits a lower long term labour productivity performance after the oil crisis, while Latin America manages to maintain its long term expansion at a fairly similar rate than in previous years. (Not statistically significant differences are uncovered by our methodology).

The process of convergence stops in the mid-1980's when the US manufacturing sector recovers from a rather long period of decay and attains a much faster rate of expansion than Manufacturing Industry in Latin America. (see upper right hand figure). Even if the rate of growth of labour productivity increases in Latin

America after the mid-1980's (see both upper figures), our methodology does not identify such change as a 'permanent' feature of the series but rather as a 'once-for-all' increase in the rate of expansion which can not be substaisted in time. (Hence, the long term rate of expansion presented in the lower figure does not show any alteration). The final result of the experiment is that at the end of the period labour productivity in Latin America still appears to be 27.2% of the US level, i.e. very little convergence indeed has taken place during these 25 years. The relative Latin American acceleration of the early 1990's - though impressive - does not appear to be substaisted as a permanent long term feature of the production structure.

Having in previous sections of this paper shown that resource-based processing industries behaved rather differently from engineering and labour intensive ones, we have thought it worthwhile to carry out a similar econometric excercise covering four different industrial aggregates: 1. foodstuffs, beverages and tobacco. 2. textiles, garments and leather goods, 3. Metalworking industries (excluding automobiles) and, 4. Vehicles. In our next section we present the results of such excercise.

V.2. Productivity differentials at the sectorial level.

Figure 2 shows the 'stylized' behaviour of Group 1, formed by the industries producing foodstuffs, beverages and tobacco. On average these industries attain in Latin America just 22% of the US labour productivity level, and such relative performance does not seem to change much throughout the period under examination. In the same way as for the aggregate series for Manufacturing Industry as a whole (see our previous section) the relative Latin American gap contracted quite significantly during the 1970's when the average US productivity falls down nearly 6 percentage points, while the region's performance remains steady around 2% per annum. In the 1980's, however, the average US rate of expansion becomes much higher than the Latin American one (see the upper right hand side of Figure 2) increasing the relative gap once again, in such a way that the end situation is in no way different from the initial one.

Figure 3 describes the long term relative performance of Group 2, formed by the producers of textiles, garments and leather goods. As different from Group 1, these industries exhibit a very significant increase in their productivity performance in the early 1990's in Latin America, but such increase can not be maintained as a long term proposition. Their relative position vis a vis the US counterpart deteriorates significantly ending the period nearly 20% below their relative initial standing.

Figure 2:

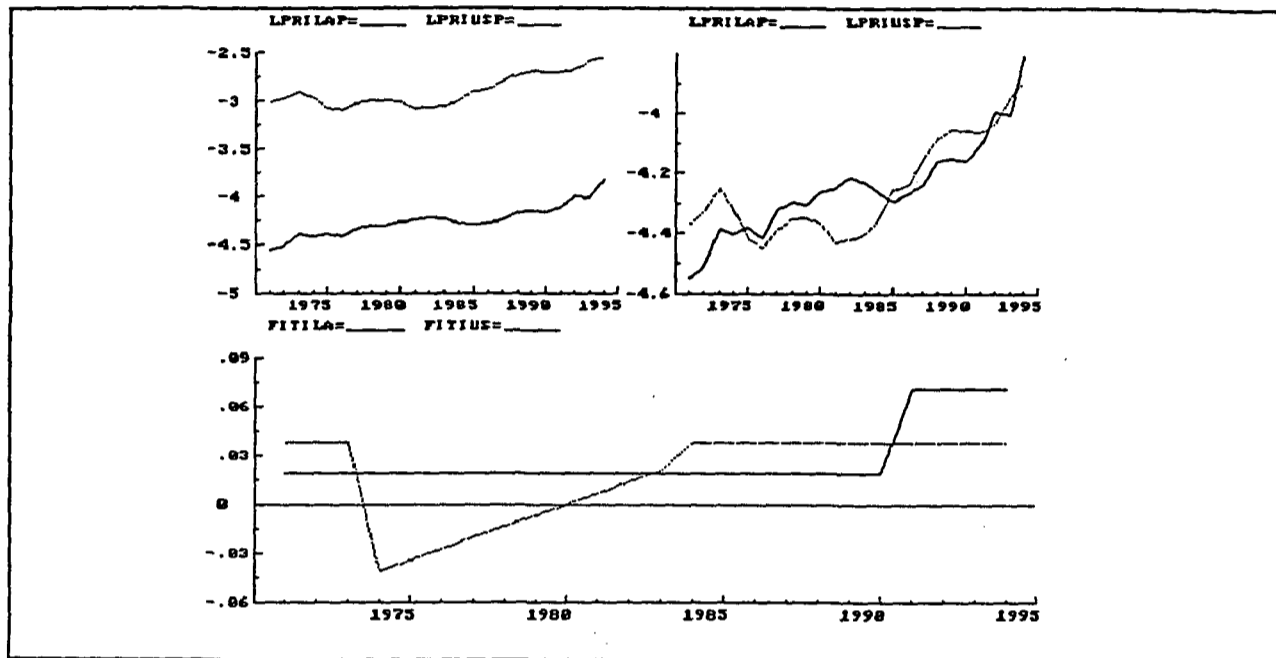


Figure 3:

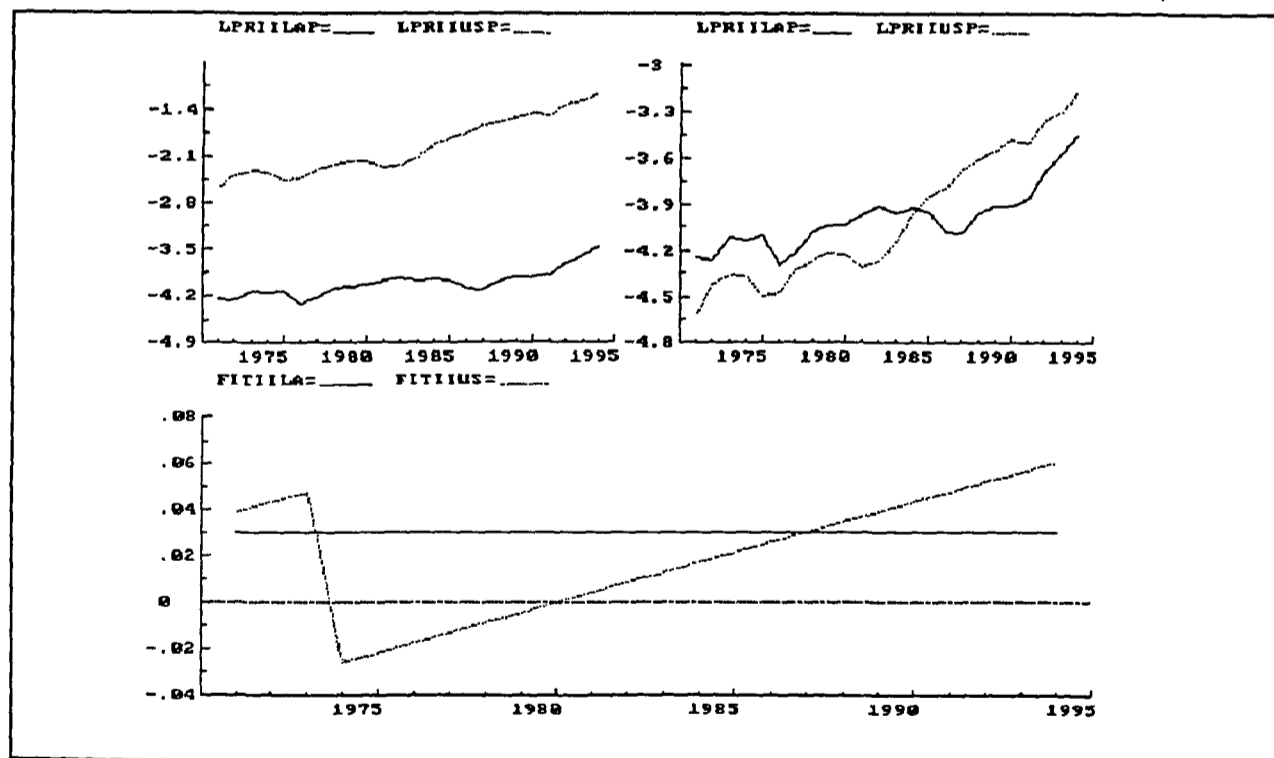
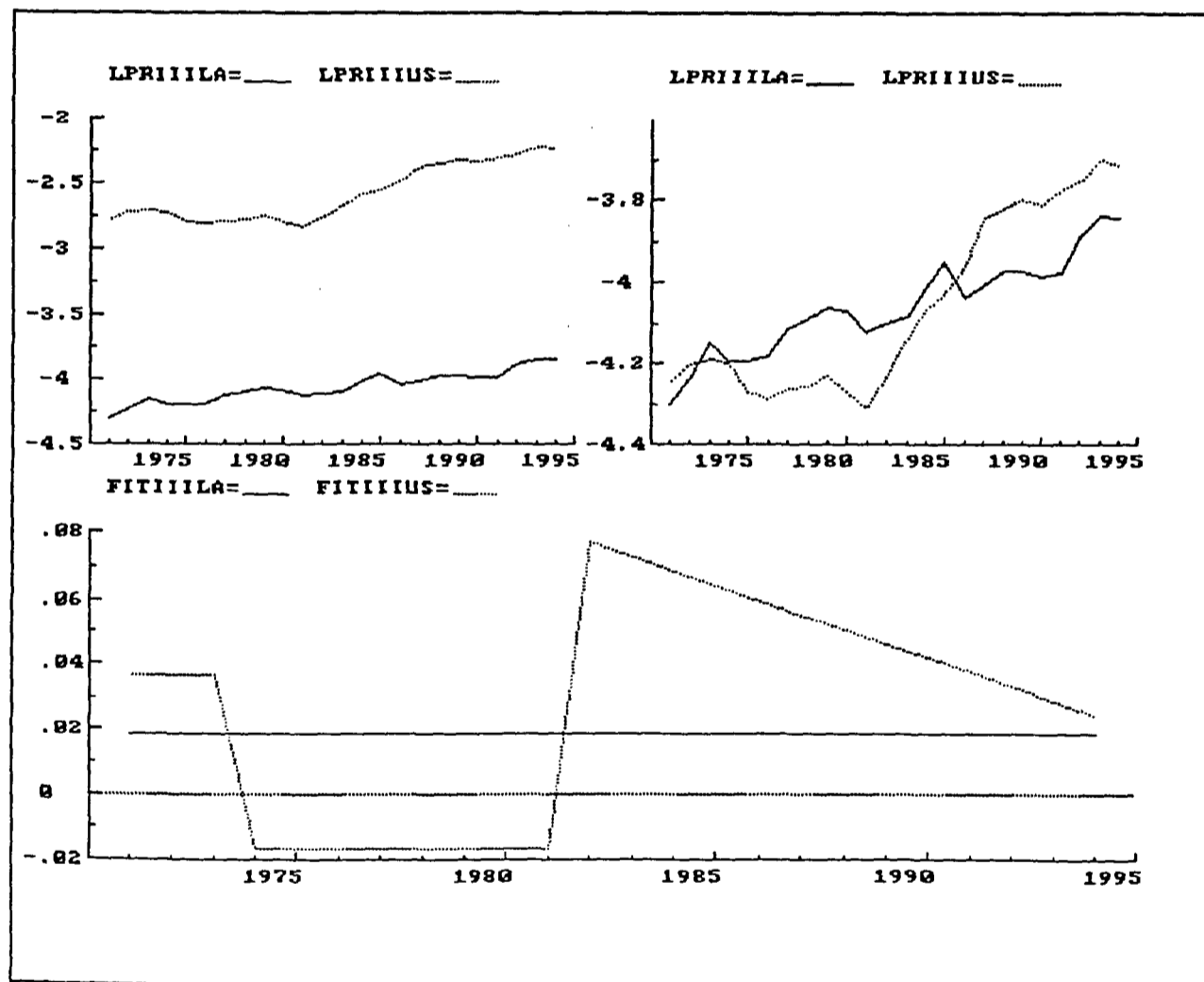


Figure 4 presents the comparative evolution of resource-based industries producing industrial commodities. Here the average rate of expansion of the Latin American aggregate is much higher than that of its US counterpart and the relative productivity gap closes down significantly, even though if in absolute terms the region's labour productivity is only about half of the level attained in the US. Having been only about one quarter of such level 25 years ago its relative position has somewhat improved through time.

Figure 4:



Figures 5 and 6 describe the relative situation of the metalworking industries (excluding vehicles) and of automobile production, respectively. The initial relative labour productivity gap with the US was much higher in vehicle manufacturing than in metalworking production in general. In addition to that the long term rate of labour productivity growth was much higher in the former than in the later. As a result of both such forces the relative productivity gap tends to diminish through time even though still both sectors are well behind US productivity levels in absolute terms.

Figure 5:

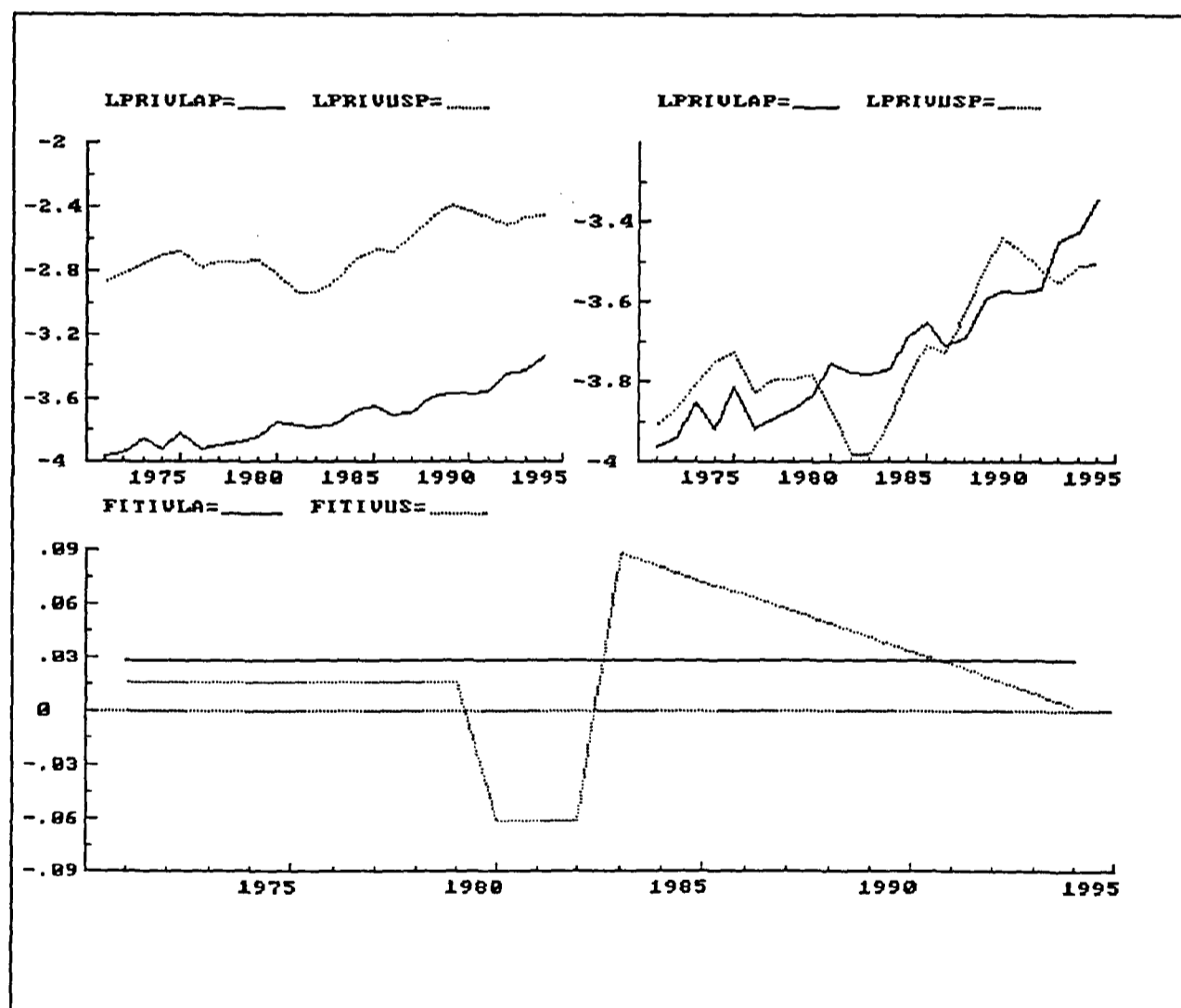


Figure 6:

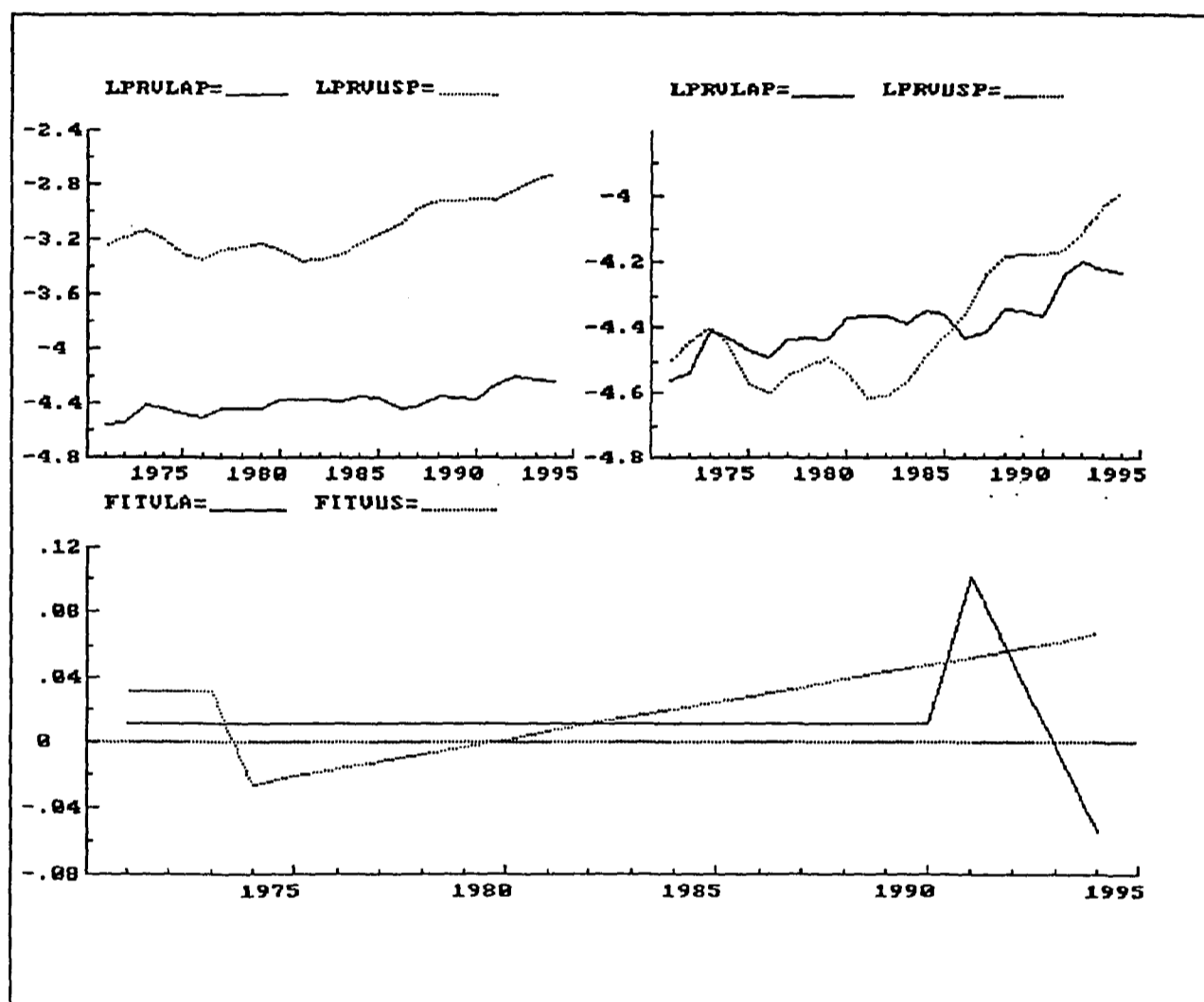


Table 9 presents a summary of the attained results.. Comparing point to point labour productivity in the US and in Latin America in 1970 and 1995 for five different manufacturing aggregates we notice that both the raw material processing industries, producing industrial commodities, and the vehicle industries, producing transport material, constitute the two areas of manufacturing production where the relative productivity gap has diminished the most, i.e. where a gradual process of convergence seems to be on the making. Contrariwise, the production of foodstuffs and beverages, as well as that of textiles, garments and leather goods seem to be the ones where the relative productivity gap has remained almost unchanged

through time or has even increased significantly over the years. The metalworking sector producing capital goods and consumer durables (excluding automobiles) appears to be in the middle of the above picture, exhibiting some improvement in its relative position but somewhat less significant than that attained by the raw material processing industries and the automobile sector.

Table 9:

Sector	Eficiencia Inicial	Eficiencia Final	Var. % (94-70)
Alimentos	22.3	22.3	0
Tradicional	27.5	22.5	-18
Commodities	33.3	45.0	35
Metalmecanica	22.3	28.6	28
Transporte	16.5	23.4	42

VI. CONCLUDING REMARKS.

The present paper has been concerned with the major industrial and overall economic re-structuring process currently taking place in Latin America under the influence of macroeconomic stabilization and structural reform policies. Trade liberalization, the deregulation and privatization of economic activities and a much more careful management of macroeconomic aggregates are inducing far reaching changes at the macro, meso and micro level. The final outcome of such changes is still far from being understood by the profession in a clear and adequate way. A priori theory seems to be lacking to help us in the exploration of the dynamics of transitions of this kind between regulatory and policy regimes. In actual facts the structural reform programmes implemented over the last decade have acted as major non-neutral 'selection mechanisms' favouring certain types of firms, industries and regions within any given society and triggering off a significant process of business and wealth concentration with major and yet unknown long term consequences within each country. Many new conceptual and public policy issues have emerged as a consequence of these changes and demand urgent examination in a micro-to-macro framework if we are correctly to assess their significance. Among the many topics that emerge as important for future exploration we should mention the employment, business concentration and equity aspects of the overall structural transformation as outstanding fields deserving urgent consideration. The long term sustainability of recent changes in policy regime seem strongly to depend upon them.

VII. REFERENCES.

Bisang, R. Perfil tecno-productivo de los grupos economicos en la República Argentina. En: (J.Katz, Ed.) Estabilización macroeconómica, reforma estructural y comportamiento industrial. Alianza Editorial, CEPAL, IDRC, Buenos Aires, 1996.

Bisang, R., Burachik G. y Katz J.: Hacia un nuevo modelo de organización industrial. El sector manufacturero argentino en los años 1990. Alianza Editorial/CEPAL/UNU, Buenos Aires, 1995.

Boscherini F.y Vogel G. La capacidad innovativa y el fortalecimiento de la competitividad de las firmas: el caso de las PYMES exportadoras argentinas. Mimeo, Buenos Aires, 1996.

Cepal: Fortalecer el Desarrollo. Interacciones entre macro y microeconomía. Naciones Unidas, Santiago de Chile, 1996.

Diaz, A: Chile, la industria en la segunda fase exportadora. Trayectoria histórica y desafíos para los noventa. En: (J.Katz.Ed.) Op.Cit. Alianza Editorial, CEPAL, IDRC. Buenos Aires, 1996.

Dickey, D.A. y Fuller, W. (1979): "Distribution of the Estimators for Autoregressive Time Series with a Unit Root ", Journal of the American Statistical Association, 84, 427-431.

Doornik, J.A. y Hendry, D.F. (1994). PcGive 8.0. An Interactive Econometric Modelling System. Institute of Economics and Statistics. University of Oxford. International Thomson Publishing, Berkshire House, London, England.-

Fuch, M : Los programas de capitalización de la deuda externa argentina. Mimeo, CEPAL, Buenos aires, 1990.

Gerschunoff P y Torre J.C.: Argentina: La política de liberalización económica bajo un gobierno de base popular. Mimeo, Instituto DiTella, Buenos Aires, 1996.

Kosacoff B.: El desafío de la competitividad. La industria Argentina en transformación. Alianza Editorial, CEPAL. Buenos Aires, 1994.

Misala A.: Las reformas económicas de los años 1970 y la industria manufacturera chilena. Colección Estudios CIEPLAN, Numero Especial 35, Santiago, 1992.

Nelson R. Recent evolutionary theorizing about economic change. Journal of Economic Literature, Vol.XXXIII March 1995

Obstchatko E. Industrialización basada en Recursos Naturales. Mimeo, CEPAL, Santiago de Chile, 1996.

Paredes R. and Sanchez J.M.: Grupos económicos y desarrollo. El caso de Chile. En: (J.Katz, Ed.) Op.Cit. Alianza Editorial, CEPAL, IDRC, Buenos Aires, 1996.

Posthuma A.C. Restructuring and changing market conditions in the brazilian auto components industry. CEPAL/IDRC Research Programme on Production Restructuring and international competitiveness in Latin America. Mimeo, Santiago de Chile, 1995.

Sheiken H. and Mankita I. Technology and work organization in Latin American motor vehicle industries. CEPAL/IDRC Research Programme on Production Restructuring and international competitiveness in Latin America. Mimeo, Santiago de Chile, 1995.

Stumpo, G. and Bielschowsky Empresas Transnacionales manufactureras en cuatro estilos de reestructuración en America Latina: Argentina, Brazil, Chile y Mexico. (En: J.Katz Ed.) Op.Cit. Alianza Editorial, CEPAL/IDRC, Buenos Aires 1996.

Stumpo, G. El sector de Celulosa y Papel en Chile. Un caso exitoso de reestructuración hacia los commodities industriales. CEPAL/IDRC Research Programme on Production restructuring and international competitiveness in Latin America. Mimeo, Santiago de Chile, 1995.