# TRADE POLICY AND INDUSTRIALIZATION IN COLOMBIA, 1967-1991

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## I.    INTRODUCTION

As in other Latin American countries, Colombia adopted an import substitution industrialization (ISI) policy in the 1930s. As a result of the need to reduce the excessive dependence on coffee foreign exchange earnings, since the late 1950s, ISI was combined with an explicit export promotion strategy. This "mixed model", as we will call it in this paper, was enriched by the trade and exchange reform of 1967, leading to one of the most successful periods of industrial and export growth in Colombian history.

Since the mid-1970s, this process was interrupted. The turning point can be traced to the abandonment of the mixed model as a reflection of the "Dutch disease" effects of the booms in international coffee prices and foreign indebtness which took place between 1975 and 1982. As industrial growth slackened, total factor productivity levelled off, export coefficients declined and structural change ceased. Since the mid-1980s, the return to the central features of the mixed model was reflected in the renewed dynamism of the industrial sector. Nonetheless, the falling returns from the import-substitution elements of the model, together with the radical change in external conditions facing the country, led to a radical turnaround in economic policy in 1990-1991, by which the country adopted a more explicit outward-oriented strategy.

This paper analyzes the relations between trade policy and industrial performance in Colombia since 1967. It is divided in six sections, the first of which is this introduction. The second

overviews events prior to 1967. The third reviews foreign exchange and trade policies since 1967. The fourth considers the demand aspects of manufacturing growth since 1967, including the determinants of export performance. The fifth takes a look at the supply aspects, particularly the determinants of total factor productivity growth. Finally, the sixth draws some major conclusions of the analysis.

## II. TRADE AND INDUSTRIALIZATION PRIOR TO 1967

ISI industrialization took off in the 1930s. Starting in that decade, the share of manufacturing in GDP grew rapidly for half a century, as the industrial sector underwent a steady structural transformation. Three distinct phases can be differentiated in this process. During the first wave of import-substitution, which took place during the Great Depression and the Second World War, industrial growth was led by beverages, oil derivatives, non-metallic minerals and, particularly, textiles. During a transitional phase, which covers the first decade of the post-war period, these sectors continued to expand and, indeed, peaked as a share of manufacturing value-added in the early 1950s, but the contribution of "late" industries to manufacturing activity started to increase. Since the 1950s, the central feature was the rise of "late" industries (paper and printing, chemicals and rubber, basic metals and metal products), in what be adequately called the second phase of import substitution (Ocampo, 1991, 1992).

As in most LDCs, the employment creation effects of factory manufacturing remained limited. Factory employment peaked slightly over 10% of non-agricultural employment from the mid-1950s to the mid-1960s but then started to decline (Ocampo, 1992). The scarcity of skilled labor was a major characteristic of industrialization up to the mid-1960s and was reflected in rising relative industrial wages. Educational efforts undertaken on a massive scale since the 1950s interrupted this process and reversed it in the following decade (Londoño, 1990).

In the early stages of industrialization, capital and entrepreneurship came mainly from domestic sources. In the second phase of import substitution, both public-sector firms and multinationals played an increasing role. Nonetheless, its global scope remained limited. Berry (1983) estimated that 8% of industrial production came in 1969 from public-sector firms, whereas 16% of capital invested in manufacturing came then from multinationals. Although detailed calculations for later years are not available, the share of MNCs in the manufacturing capital stock may have declined in recent decades.

Stock issues (by both corporations and limited-liability companies) and the reinvestment of profits were the major sources of capital accumulation up to the mid-1950s. The share of stock issues as a source of funds of industrial firms experienced a long term downward trend since the mid-1950s, as the reinvestment of profits and, particularly, bank lending filled the gap in different periods (Sandoval, 1983; Ocampo, 1992). Since the early stages of development, industrial concentration was relatively high in most sectors (Echavarría, 1989). Detailed studies for 1968 and 1984 indicate that concentration has been rising in recent decades; by the latter year, close to 60% of industrial production came from sectors characterized by the prevalence of highly concentrated oligopolies --those with 4-firms ratios 50% or higher (Misas, 1989).

Import substitution, as it took place in Colombia, has been characterized by many authors as a relatively efficient process. TFP grew at an annual rate of some 2% (faster if the decline of cottage-shop employment is included in the calculations) and was reflected in falling relative manufacturing prices ( Berry, 1983; Posada and Rhenals, 1988; Ocampo, 1992). The country did not incur in high costs associated with the excessive development of "late" industries, where high capital intensity and economies of scale are important. In 1967-1974, the share of many traditional sectors in GDP remained larger than the Kuznets-Chenery pattern, while some late sectors, particularly basic metals and

metalmechanic activities were considerably "underexpanded" relative to such standard (Syrquin, 1987; Echavarría et al., 1983). On the other hand, in 1969, effective protection really utilized by the traditional manufacturing industries was relatively low compared to other developing countries (Hutchenson, 1973, and Table 2 below).

The traditional instruments of state promotion of industrialization were designed since the 1930s, but most of them came to play an important role only in the second phase of import substitution in the mid-1950s. Protectionism was firmly imbedded in domestic policies since the late nineteenth century but it played a rather secondary role during the first phase of import substitution. Indeed, a generalized system of high ad-valorem duties was only established in 1959 and 1964. By then, tariffs were fixed at fairly high levels --an weighted average of 65.6% (Martínez, 1986).

Early in the Great Depression, the country adopted stringent foreign exchange controls. Controls on current transactions have constantly maintained since 1931. Quantitative import restrictions (QRs) were introduced in 1937, but they were used on a large scale only much later, when the collapse of coffee prices in the mid-1950s generated a period of endemic foreign exchange shortage. In 1948, exchange controls on capital movements were replaced by a freely floating exchange rate for capital transactions. This innovation was part of a transition to a multiple exchange rate system, which prevailed for two decades.

Prior to the large-scale use of tariffs and QRs since the mid-1950s, real exchange rate fluctuations played a more important role in providing price signals to industrial entrepreneurs. Indeed, since the 1920s, the real exchange rate has depicted two basic features: a long-run upward trend and a cyclical pattern opposite to that of the (mainly coffee-determined) terms of terms (Ocampo, 1991). Real depreciation has

thus provided a signal to deepen import substitution when coffee prices have collapsed --the 1930s, the second half of the 1950s and the 1960s. In the intermediate period of high coffee prices, appreciation played an alternative role: it provided relatively cheap foreign exchange to accelerate capital accumulation (Ocampo, 1992).

The intensive use of both tariffs and QRs induced by the collapse of coffee prices in the mid-1950s also led the government to introduce a complete set of policies to promote the diversification of exports. Preferential (capital market) exchange rates for non-traditional exports were granted for the first time in 1948. Since the mid-1950s, such preferential exchange rates were complemented by tariff exemptions for imports used in the production of non-traditional exports, known in Colombia as the Vallejo Plan (1957), tax incentives (1960), and special credit facilities, including access to external credit free of exchange rate risks (1962 and 1964). Up to 1967 such incentives were very high (an average of 35% in 1953-1966) but unstable (Diaz-Alejandro, 1976, Ch. 2).

The anti-export bias generated by intensive protectionism was thus eased by devaluation and aggressive export promotion policies since the mid-1950s. The policy package followed since then can then be adequately characterized as a "mixed" strategy of import substitution cum export promotion. Since the late 1950s rapid import substitution was in fact accompanied by export diversification, particularly in agricultural activities (Ocampo, 1991).

The incentives generated by the trade regime were reinforced by direct public-sector investments and by the design of appropriate instruments to finance the industrial sector. The Industrial Development Institute, IFI, was created in 1940 to advance risk capital on a temporary basis to new import-substitution sectors. IFI played a leading role in the diversification of industrial production during the second phase

of ISI. Simultaneously, the government oil company, ECOPETROL, created in 1951, played a crucial role in oil refining and petrochemical developments in the 1960s. Since the early 1970s, the role played by IFI and ECOPETROL in the channelling of public risk capital to new manufacturing sectors was considerably downgraded.

On the other hand, development financing was given a central role in economic policy in the 1950 Financial Reform. Investment banks (Corporaciones Financieras) were created in the late 1950s as new instruments to channel private risk capital and long-term financing to the industrial sector. However, the large-scale provision of directed credit to manufacturing and other priority sectors --agriculture in particular-- came much later, in the mid-1960s, when a series of Development Funds managed by the Central Bank (Banco de la República) were created. These Funds were financed by loans from multilateral agencies, forced investments by financial intermediaries, explicit taxes and, to a secondary extent, by high-powered money creation.

### III. TRADE AND MACROECONOMIC POLICIES, 1967-1991

#### A.    The golden age (1967-1974)

The year 1967 is generally regarded as a turning point in the history of foreign trade and exchange policies in Colombia. In that year, the Lleras Administration, in confrontation with the major multilateral institutions and AID, put an end to a liberalization episode which had taken place since 1965 under severe pressures form the donor agencies (Diaz-Alejandro, 1976, Ch. 7). The government refused to devalue, as these agencies demanded, and adopted instead the crawling peg and stringent import and exchange controls. In addition, it adopted a stable export promotion policy, which incorporated into a coherent framework the incentives for non-traditional exports which had been used in previous decades.

This policy package was a prelude to the period of fastest growth and export diversification in postwar Colombian economic

history. From 1967 to 1974 GDP grew at an average of 6.3%, as manufacturing boomed, reaching an impressive 9.6% a year (Figure 1.A) [1]. Controls kept the current account deficit of the balance of payments initially low. As controls eased (see below), the deficit increased, peaking in 1971, but subsequently fell, as exports increased and the demand for imports normalized. Inflation accelerated at the end of the boom and by 1974 had reached some 25%, a high level by Colombian historical standards (Figure 2.A). Industrial inflation lagged up to 1972 but then led the acceleration of inflation in 1973 and 1974.

The 1967 package may be seen as a consolidation and rationalization of the "mixed" strategy followed since the late 1950s. In 1969, the Cartagena Agreement, which created the Andean Group, added a new element to the strategy: ISI in a regional context, conceived as a mechanism to reduce the costs of advanced import substitution. In the early 1970s, dissatisfaction with ISI spread in Colombia and the region, as the mechanisms adopted by the Andean Group proved inoperative. Actually, during the Pastrana Administration, inaugurated in August, 1970, ISI became a villain and emphasis was placed on export growth component of the "mixed" strategy. Criticism of ISI was indeed incorporated in the Development Plans of succeeding Administrations. It did not lead, however, to a dismantling of the protectionist mechanisms established in previous years, but rather to an open disregard for new IS initiatives and to a gradual import liberalization.

In any case, and contrary to what the donor agencies argued in 1965, import liberalization was not a precondition for either export diversification or rapid economic growth. Rather, the causal link ran in the opposite direction. The success in easing the severe foreign exchange bottleneck which the country had faced since the mid-1950s and the resumption of rapid economic

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[1] As pointed out in the Appendix, the "industrial sector", as defined in this paper, excludes coffee, meat processing and oil derivatives.

# FIGURE 1

## A. GDP and Industrial Growth, 1967-199
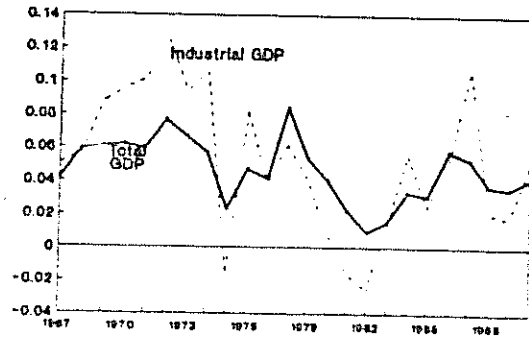


## B. Import Substitution Vs. Relative Industrial Import Prices
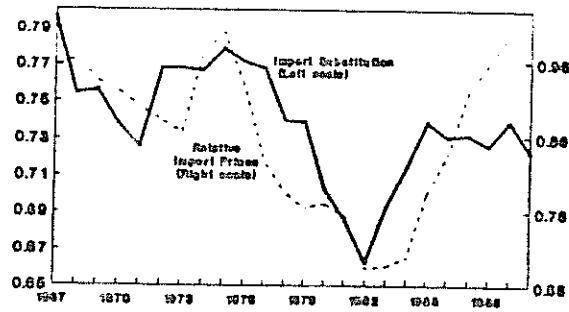


## C. Manufacturing Export Coefficient Vs. Relative Export Prices
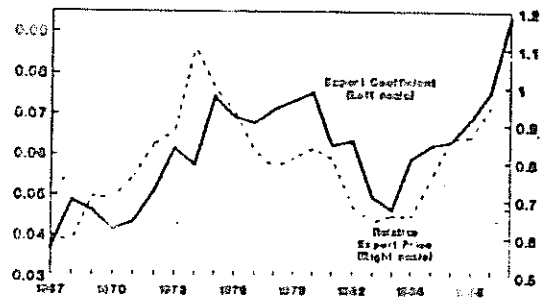
# FIGURE 2

## A. Inflation: GDP Deflactor Vs. Industrial Prices



## B. Relative Industrial Prices and Units Costs



## C. Industrial Mark-Up and Estimated Profit Rate

growth were the bases for the gradual liberalization which took place in the early 1970s.

In the first years of that decade, the process took the form of reducing red tape and delays in the approval of licenses for non-competitive imports and in reducing the "water" in the 1964 tariff. However, as we will see in Section III.D below, this tariff reform, and its successors in the following years, maintained the traditional escalated tariff structure, which gran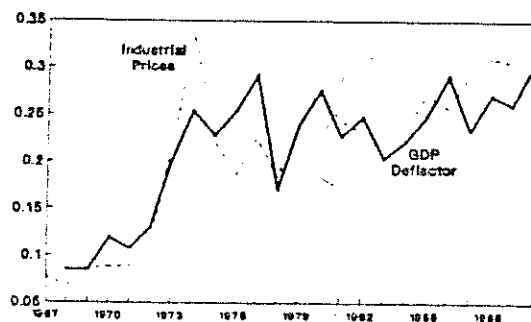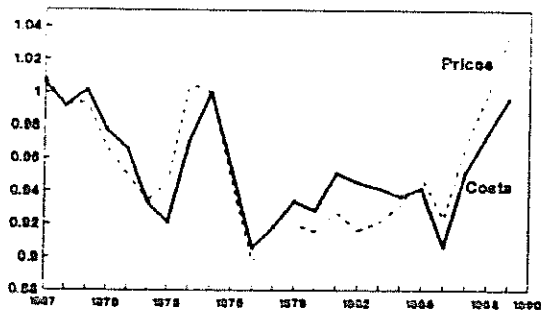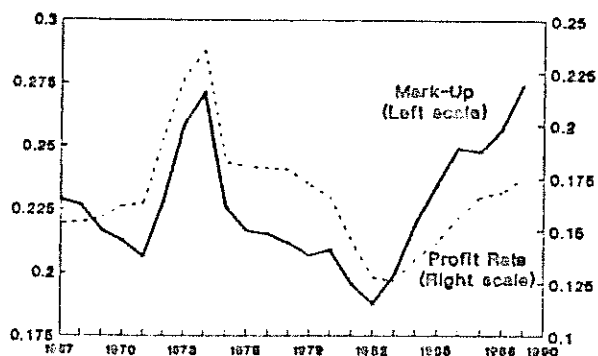ted high protection to the traditional consumer good industries. Liberalization was thus initially consistent with the preservation of high tariffs and a generalized system of QRs, including a substantial list of goods for which imports continued to be totally prohibited. Explicit liberalization was adopted only late in the process, at the end of 1973 and early 1974, as part of a program to fight rising inflation (Table 1).

The system of export incentives designed in 1967 included four major mechanisms: (1) a tax rebate certificate; this certificate replaced the exchange rate and tax incentives typical of the 1960s; (2) tariff exemptions for imports used in the production of non-traditional exports (the Vallejo Plan); (3) the prefinancing of exports free of exchange rate risks; and (4) export financing by the new Export Promotion Fund, PROEXPO. As Table 1 shows, from 1967 to 1974 the subsidy element of these incentives fluctuated between 19 and 27%. The global incentive was smaller than that typical of the two decades prior to 1967 but considerably more stable.

The crawling peg was initially successful in generating a substantial real devaluation. The joint effect of devaluation and stable export incentives was thus a rapid increase of the real effective exchange rate applicable to non-traditional exports (Table 1). In the early 1970s the real effective exchange rate for imports also depreciated. However, such rate was revalued in 1973 and 1974, as liberalization accelerated. By the mid-1970s it was thus back to the levels typical in the late-1960s. If the

## TABLE 1

## TRADE POLICY, 1967-1991

| Year | Average Nominal Tariff a/ | Basic Surcharge a/ | Collected Average Tariffs and Surcharges | Distribution of items in the tariff schedule c/ | | | Imports under prior licensing as % of total imports. | Excess demand for licenses d/ | Tariff equivalent of QRs | Weighted real import exchange rate (1986=100) | Average export subsidies | Weighted real exchange rate for non-traditional exports (1986=100) |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | | | Free licensing | Prior Licensing | Prohibited | | | | | | |
| 1967 | 65.6 b/ | 3.0 | 14.7 | | | | 96.2 | 41.0 | 36.2 | 75.1 | 23.1 | 73.4 |
| 1968 | | | 15.1 | | | | 83.0 | 19.4 | 25.0 | 76.6 | 21.2 | 80.1 |
| 1969 | | | 16.2 | | | | 82.8 | 21.6 | 25.7 | 78.9 | 19.1 | 79.9 |
| 1970 | 51.9 | | 17.5 | | | | 81.0 | 8.9 | 20.9 | 81.0 | 19.8 | 84.7 |
| 1971 | | | 16.4 | 3.4 | 80.4 | 16.2 | 71.7 | 12.7 | 19.9 | 82.6 | 22.6 | 90.0 |
| 1972 | | | 16.5 | | | | 71.9 | 12.9 | 20.0 | 85.8 | 26.8 | 96.6 |
| 1973 | | | 16.7 | 20.2 | 79.8 | 0.0 | 68.8 | 6.0 | 17.0 | 82.6 | 26.6 | 95.0 |
| 1974 | | 5.0 | 13.6 | 29.6 | 70.4 | 0.0 | 56.4 | 3.4 | 13.3 | 76.2 | 23.5 | 90.9 |
| 1975 | 32.6 | 6.5 | 15.3 | 34.1 | 65.9 | 0.0 | 57.2 | | 13.3 | 79.3 | 13.0 | 85.1 |
| 1976 | | | 16.1 | | | | 60.2 | | 14.0 | 79.3 | 10.2 | 81.9 |
| 1977 | | | 17.2 | | | | 58.8 | | 13.7 | 71.7 | 9.9 | 73.4 |
| 1978 | 30.5 | | 15.7 | 52.8 | 47.2 | 0.0 | 57.2 | | 13.3 | 70.4 | 14.1 | 76.0 |
| 1979 | 28.2 | | 16.4 | 66.7 | 33.3 | 0.0 | 55.6 | 1.1 | 12.4 | 67.1 | 14.1 | 72.6 |
| 1980 | 26.0 | | 14.9 | | | | 56.0 | 1.4 | 12.6 | 67.8 | 15.1 | 74.8 |
| 1981 | 25.9 | 6.5 | 14.8 | | | | 47.8 | 3.4 | 11.3 | 65.4 | 16.4 | 73.9 |
| 1982 | | | 14.8 | 70.8 | 29.2 | 0.0 | 45.3 | 3.7 | 10.8 | 60.4 | 18.8 | 70.0 |
| 1983 | | | 14.5 | 41.9 | 58.1 | 0.0 | 58.6 | 19.5 | 18.9 | 62.9 | 23.7 | 70.9 |
| 1984 | 41.7 | 7.0 | 14.8 | 0.5 | 83.0 | 16.5 | 71.9 | 23.8 | 23.6 | 71.1 | 27.0 | 79.0 |
| 1985 | 31.4 | 15.0 | 19.3 | 27.0 | 71.6 | 1.4 | 85.2 | 35.4 | 31.1 | 89.7 | 26.4 | 89.9 |
| 1986 | | | 23.9 | 36.2 | 62.7 | 1.1 | 57.6 | 19.2 | 18.6 | 100.0 | 18.4 | 100.0 |
| 1987 | | 18.0 | 24.9 | 37.8 | 61.1 | 1.1 | 54.7 | 22.5 | 18.9 | 103.7 | 15.6 | 100.1 |
| 1988 | | | 24.1 | 38.7 | 60.3 | 1.1 | 52.8 | 18.0 | 17.0 | 101.5 | 14.1 | 98.9 |
| 1989 | 26.6 | | 22.4 | 38.8 | 60.1 | 1.1 | 55.3 | 2.3 | 12.7 | 98.3 | 14.8 | 101.5 |
| 1990 | 21.1 | 13.0 | 18.1 | 96.7 | 3.3 | 0.0 | 38.3 | 3.5 | 9.2 | 103.1 | 13.3 | 112.5 |
| 1991 | 6.1 | 8.0 | 13.3 | 98.6 | 1.4 | 0.0 | 11.8 | 0.5 | e/ | 88.0 | 10.9 | 106.9 |

a/ End of year. Unweighted.    b/ 1964

c/ August 1971 and 1973; June 1974; February 1975 and 1978; September 1979. End of year since 1982.

d/ Partial information for 1974-1984 (except in 1980).

e/ Assumed to be zero in 1991.

SOURCES: Ocampo (1990a) and author's estimates using information from Banco de la Republica, INCOMEX, PROEXPO and DANE. Real effective exchange rates are estimated using the series of FEDESARROLLO up to 1975 and that of Banco de la Republica since then. The real effective import exchange rate includes average collected import duties and the tariff equivalent of QRs. The latter is calculated using the coefficients of a regression of the demand for imports in 1967-1990, which includes as explanatory variables GDP, real import prices (including import duties), the proportion of imports under prior licensing and the percentage of licenses rejected. The real effective exchange rate for non-traditional exports includes export subsidies.

period of the boom is taken as a whole, the authorities were able to compensate the liberalization of QRs with the devaluation of the basic exchange rate and to increase the relative price incentives for non-traditional exports. As we will see in part IV, this was reflected in the rapid expansion of manufacturing exports.

B.    From boom to crisis (1975-1982)

The 1967-1974 expansion came to an end as the result of the contractionary fiscal and monetary policies adopted by the Lopez Administration --inaugurated in August of the latter year-- to reduce the high inflation rates experienced at the end of the boom. As part of the stabilization package, the government reduced the tax certificates received by exporters. The attempt to compensate this reduction with a temporary acceleration of the crawl of the peso and with increasing credit from PROEXPO was only partly successful and thus resulted in a real appreciation of the exchange for non-traditional exports (Table 1).

When the stabilization program was just starting to bear some fruits in terms of inflation, particularly of industrial goods (Figure 2.A), the Colombian economy was faced with the favorable terms of shocks generated by the 1975 frosts in the coffee regions of Brazil. The major preoccupation of the economic authorities was then how to manage five consecutive years of booming coffee prices and current account surpluses. Since it was decided from the onset that the coffee sector would not play the leading role in the stabilization effort (real domestic coffee prices were significantly raised in the early part of the boom, largely to accelerate the renovation of plantations), a harsh monetary and fiscal policy was adopted, together with strong controls on external indebtness.

The inauguration of the Turbay Administration in August, 1978, led to a radically different strategy: an expansionary fiscal policy, accompanied by a contractionary monetary policy and import liberalization. The expansion of public expenditure

was justified on developmental grounds: the need to integrate the domestic market and to face the energy crisis. As a result of expenditure increases and tax reductions decreed in 1979, the virtual fiscal equilibrium typical of the coffee boom years turned into a 7.1% consolidated public sector deficit in 1982. A corollary of fiscal expansion was massive borrowing abroad by the public sector. Simultaneously, controls on private capital flows were lifted and the economy thus experienced a debt boom --sufficiently late, however, to avoid the devastating effects which similar processes had in other Latin American countries. Foreign indebtness maintained the excess supply of foreign exchange after the coffee boom came to end in 1980 and the economy started to run record current account deficits.

Although in the initial years of the coffee boom, the authorities tried to avoid its real exchange rate effects, the attempt was finally abandoned in 1977, when nominal devaluation was temporarily suspended. Real appreciation deepened during the debt boom of the early 1980s. As a result of its adverse effects on non-traditional exports (see part IV below), subsidies were increased again since 1978. The real effective export exchange rate stagnated, in any case, at fairly low levels (Table 1). Import substitution having been abandoned as an explicit development strategy since the early 1970s, the second component of the "mixed" model, export diversification, was equally left aside in the mid-1970s, but as the result of short-term macroeconomic conditions rather than a long-term strategy of any sort.

On the other hand, the effects of revaluation in the late-1970s and early 1980s were reinforced by import policies (Table 1). As part of the series of anti-inflationary programs adopted during theses years, further liberalizations of QRs and tariff reductions took place in 1976 and, particularly, in 1979-1981. As a result, by 1982, 71% of the tariff schedule had been transferred to the free licensing regime and tariffs had declined by some 20% of the levels typical in the mid-1970s (Table 1).

## TABLE 2
## EFFECTIVE PROTECTION, CORDEN METHOD

| ISIC | SECTOR | Effective protection used | Using collected tariff rates | | | Using legal tariffs. Complete tariff schedule — Tariffs only | | | | Tariffs and Surcharges | | Using legal tariffs a surcharges. Domestica produced goods. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1969 | 1974 | 1984 | 1985 | 1979 | 1984 | 1985 | 1989 | 1989 | 1991 | 1989 | 1991 |
| 311/12 | Foodstuffs | 8.9 | 54.0 | 41.3 | 37.9 | 75.1 | 124.6 | 108.3 | 146.5 | 185.7 | 60.0 | 179.9 | 59.0 |
| 313 | Beverages | 103.3 | 75.2 | 55.3 | 26.1 | 79.9 | 136.2 | 92.5 | 95.0 | 119.2 | 31.4 | 108.7 | 30.5 |
| 314 | Tobacco | 83.6 | 97.6 | 17.9 | 48.1 | 50.6 | 86.1 | 87.5 | 100.1 | 123.2 | 36.4 | 91.2 | 31.0 |
| 321 | Textiles | 7.6 | 16.0 | 70.0 | 71.8 | 129.0 | 209.6 | 104.8 | 102.3 | 134.3 | 36.2 | 149.9 | 37.8 |
| 322 | Apparel | 12.7 | 49.3 | -11.0 | -17.2 | 108.2 | 185.2 | 109.6 | 116.9 | 143.3 | 38.1 | 143.3 | 39.3 |
| 323/24 | Leather goods | 6.1 | 14.8 | 32.5 | 28.7 | 63.9 | 133.7 | 87.5 | 57.2 | 88.0 | 20.9 | 108.4 | 27.7 |
| 331 | Wood, excl. furniture | 1.1 | 17.8 | 31.4 | 30.1 | 71.6 | 117.3 | 80.9 | 80.9 | 109.2 | 30.9 | 118.0 | 32.6 |
| 332 | Furniture | -10.9 | 57.8 | 16.4 | -16.3 | 67.8 | 125.9 | 67.0 | 66.2 | 93.7 | 38.4 | 92.0 | 39.3 |
| 34 | Paper and printing | 8.0 | 40.8 | 48.1 | 41.7 | 38.4 | 61.0 | 51.4 | 56.1 | 81.5 | 24.8 | 92.5 | 30.3 |
| 351/52 | Basic chemicals | 22.6 | 7.3 | 35.9 | 37.5 | 25.3 | 41.3 | 34.7 | 23.0 | 44.4 | 16.5 | 64.9 | 21.8 |
| 353/54 | Oil refining | 4.1 | 6.7 | 49.4 | 49.1 | 23.6 | 27.0 | 30.2 | 31.7 | 59.2 | 27.6 | 73.3 | 30.8 |
| 355 | Rubber | -25.8 | 18.1 | 60.4 | 68.5 | 75.7 | 99.1 | 71.7 | 58.9 | 88.3 | 28.6 | 99.7 | 31.8 |
| 356 | Plastics | 89.2 | n.a | 62.6 | 57.7 | 73.8 | 126.3 | 88.6 | 88.6 | 118.6 | 33.9 | 131.0 | 38.9 |
| 36 | Non-metallic minerals | 0.0 | 5.3 | 37.3 | 43.1 | 43.0 | 71.7 | 53.6 | 49.3 | 75.6 | 25.7 | 75.0 | 26.1 |
| 37 | Basic metals | 32.1 | 8.8 | 28.2 | 38.1 | 28.8 | 42.7 | 32.4 | 24.7 | 53.1 | 18.0 | 69.8 | 23.7 |
| 381 | Metal products | 42.9 | 47.0 | 55.9 | 58.5 | 63.9 | 99.7 | 75.6 | 58.3 | 84.8 | 31.0 | 87.4 | 32.6 |
| 382 | Non-electrical machinery | 11.9 | 27.4 | 28.7 | 31.4 | 25.8 | 39.8 | 24.8 | 20.8 | 44.2 | 13.1 | 52.3 | 18.2 |
| 383 | Electrical machinery | 668.1 | 28.4 | 30.2 | 31.1 | 51.0 | 75.2 | 50.6 | 40.7 | 67.2 | 23.8 | 80.1 | 28.5 |
| 384 | Transport equipment | 319.0 | 70.9 | 29.7 | 22.9 | 72.5 | 99.1 | 61.5 | 71.3 | 96.3 | 29.0 | 117.5 | 38.7 |
| 385/90 | Scientific equipment | 0.0 | 24.1 | 44.6 | 37.6 | 101.1 | 76.7 | 58.0 | 41.1 | 69.9 | 24.8 | 77.3 | 31.2 |
| | Traditional Sectors a/ | 6.7 c/ | 41.7 | 46.9 | 40.8 | 81.1 | 134.6 | 90.1 | 98.9 | 129.2 | 38.7 | 129.7 | 39.0 |
| | Late Industries a/ b/ | 104.5 | 28.4 d/ | 40.3 | 40.3 | 45.9 | 67.4 | 50.0 | 43.8 | 68.8 | 22.8 | 83.4 | 28.1 |
| | TOTAL MANUFACTURING a/ | 53.3 c/ | 36.5 d/ | 44.3 | 40.6 | 67.0 | 107.6 | 74.0 | 76.8 | 105.0 | 32.3 | 111.1 | 34.7 |

a/ Weighted by 1979 values added.
b/ Sectors 351/352, 355,356,37 and 38.
c/ Excludes beverages and tobacco.
d/ Excludes plastics.
SOURCES: Hutchenson (1973); Cubillos and Torres (1987); DNP and INCOMEX.

## TABLE 4
## SECTORAL FEATURES

| | Foodstuffs | Beverages | Tobacco | Textiles, Apparel and Leather | Wood and products | Paper and Printing | Chemicals | Non-metallic minerals | Metal and products | Machinery | Transport Equipment | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A. Share of value added** | | | | | | | | | | | | |
| 1967 | 15.23 | 9.11 | 5.66 | 23.09 | 3.62 | 6.30 | 15.35 | 6.68 | 9.32 | 3.51 | 2.13 | 100.00 |
| 1974 | 13.41 | 10.76 | 4.85 | 21.44 | 2.90 | 7.57 | 15.19 | 6.17 | 8.93 | 4.71 | 4.07 | 100.00 |
| 1979 | 15.25 | 11.64 | 2.87 | 19.42 | 2.54 | 8.32 | 15.48 | 6.53 | 8.10 | 5.40 | 4.45 | 100.00 |
| 1983 | 17.24 | 13.07 | 3.05 | 16.16 | 2.49 | 8.78 | 15.88 | 7.08 | 7.51 | 4.90 | 3.84 | 100.00 |
| 1989 | 16.63 | 11.47 | 2.28 | 16.83 | 2.84 | 9.36 | 16.40 | 7.69 | 7.07 | 5.37 | 4.07 | 100.00 |
| 1991 | 16.18 | 11.02 | 2.58 | 17.20 | 2.70 | 10.43 | 17.15 | 7.92 | 6.86 | 5.03 | 3.08 | 100.00 |
| **B. Share of exports** | | | | | | | | | | | | |
| 1967 | 37.96 | 0.00 | 0.00 | 21.02 | 5.24 | 10.37 | 7.54 | 7.74 | 7.28 | 2.41 | 0.07 | 100.00 |
| 1974 | 17.29 | 0.05 | 0.05 | 34.19 | 6.22 | 3.03 | 15.18 | 8.51 | 7.32 | 4.50 | 1.12 | 100.00 |
| 1979 | 20.67 | 0.02 | 0.12 | 31.22 | 3.68 | 5.47 | 14.78 | 9.13 | 4.32 | 6.25 | 1.53 | 100.00 |
| 1983 | 32.21 | 0.12 | 0.07 | 22.57 | 1.88 | 7.24 | 20.73 | 5.17 | 2.90 | 4.21 | 1.12 | 100.00 |
| 1989 | 20.44 | 0.15 | 0.10 | 34.56 | 1.06 | 6.84 | 22.17 | 6.05 | 1.94 | 4.46 | 0.45 | 100.00 |
| 1991 | 19.64 | 0.26 | 0.38 | 31.58 | 1.43 | 7.06 | 22.92 | 7.42 | 2.16 | 6.39 | 0.76 | 100.00 |
| **C. Exports coefficient a/** | | | | | | | | | | | | |
| 1967 | 5.80 | 0.00 | 0.00 | 3.57 | 6.39 | 6.59 | 1.77 | 7.07 | 3.44 | 2.98 | 0.12 | 3.70 |
| 1974 | 5.18 | 0.04 | 0.14 | 10.19 | 15.47 | 2.48 | 4.34 | 12.94 | 5.11 | 5.67 | 1.57 | 5.75 |
| 1979 | 7.35 | 0.02 | 0.60 | 12.43 | 14.33 | 5.48 | 5.59 | 16.65 | 4.05 | 9.63 | 2.37 | 7.31 |
| 1983 | 6.98 | 0.06 | 0.23 | 7.29 | 5.24 | 4.67 | 5.09 | 5.88 | 1.96 | 4.96 | 1.41 | 4.95 |
| 1989 | 7.11 | 0.14 | 0.54 | 16.87 | 3.91 | 6.20 | 7.91 | 9.40 | 2.16 | 7.25 | 0.80 | 7.54 |
| 1991 | 11.41 | 0.37 | 3.34 | 23.78 | 9.02 | 9.09 | 12.47 | 17.92 | 3.74 | 16.91 | 2.81 | 12.08 |
| **D. Import substitution b/** | | | | | | | | | | | | |
| 1967 | 93.45 | 97.53 | 99.50 | 97.88 | 97.70 | 77.22 | 78.34 | 96.13 | 66.77 | 33.34 | 26.38 | 79.56 |
| 1974 | 95.92 | 93.81 | 92.24 | 94.63 | 97.03 | 79.21 | 68.61 | 89.03 | 63.22 | 42.68 | 50.50 | 76.68 |
| 1979 | 91.24 | 94.33 | 83.45 | 92.95 | 96.30 | 81.77 | 72.11 | 88.90 | 58.89 | 37.17 | 44.81 | 73.91 |
| 1983 | 91.27 | 94.59 | 85.31 | 89.20 | 90.04 | 77.78 | 68.33 | 90.61 | 49.99 | 27.51 | 37.82 | 69.32 |
| 1989 | 97.15 | 95.40 | 99.77 | 87.98 | 95.39 | 84.75 | 68.99 | 91.72 | 56.04 | 33.16 | 53.24 | 74.44 |
| 1991 | 96.22 | 98.76 | 98.68 | 84.23 | 96.14 | 85.44 | 69.58 | 89.99 | 54.35 | 32.21 | 48.93 | 74.21 |

a/ Exports as a proportion of the gross value of production.
b/ Production for the domestic market as a share of apparent domestic demand.
SOURCES: See Table 3.

TABLE 3

SECTORAL SOURCES OF GROWTH, DEMAND SIDE
(Gross value of production)

| | Foodstuffs | Beverages | Tobacco | Textiles Apparel and Leather | Wood and products | Paper and Printing | Chemicals | Non-metallic minerals | Metals and products | Machinery | Transport Equipment | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A. Domestic demand** | | | | | | | | | | | | |
| 1967-70 | 3.43 | 10.98 | 17.43 | 5.80 | 4.71 | 14.77 | 15.33 | 9.51 | 15.19 | 21.37 | 14.64 | 11.20 |
| 1970-74 | 6.37 | 6.13 | 0.32 | 6.84 | 2.37 | 9.93 | 14.41 | 6.44 | 6.96 | 3.90 | 4.73 | 7.62 |
| 1974-79 | 5.78 | 6.55 | -2.46 | 2.55 | 0.16 | 3.34 | 1.81 | 3.75 | 4.50 | 6.76 | 9.76 | 4.23 |
| 1979-82 | 2.87 | 1.94 | 1.93 | -2.51 | -3.06 | 2.34 | 1.99 | 4.01 | 6.09 | 7.64 | 6.10 | 2.76 |
| 1982-85 | 0.13 | 2.45 | 2.06 | 0.10 | 5.40 | 2.85 | 4.88 | 1.42 | -2.49 | -6.99 | -11.07 | -0.49 |
| 1985-89 | 2.98 | 1.46 | -7.11 | 3.19 | 8.96 | 3.66 | 3.13 | 6.74 | 1.41 | 11.02 | 5.36 | 3.74 |
| 1989-91 | -0.93 | -1.18 | 7.63 | 0.43 | -3.47 | 5.26 | 1.34 | -0.57 | 1.34 | -4.59 | -8.38 | -0.31 |
| **B. Import substitution** | | | | | | | | | | | | |
| 1967-70 | 1.08 | -1.81 | -10.43 | 0.04 | -0.51 | -1.99 | -5.49 | -2.07 | -5.53 | -3.01 | 11.17 | -2.96 |
| 1970-74 | -0.16 | 0.17 | 4.28 | -0.95 | 0.19 | 2.31 | -0.08 | -0.55 | 2.26 | 8.63 | 12.02 | 1.12 |
| 1974-79 | -1.11 | 0.13 | -1.84 | -0.34 | -0.13 | 0.68 | 1.01 | -0.03 | -1.54 | -3.08 | -3.03 | -0.78 |
| 1979-82 | -1.11 | -0.06 | -0.73 | -1.51 | -1.54 | -2.15 | -1.88 | -0.39 | -8.64 | -11.23 | -12.84 | -3.53 |
| 1982-85 | 2.37 | 1.06 | 7.05 | 0.86 | 2.23 | 1.37 | -0.39 | 1.24 | 1.71 | 9.50 | 10.82 | 3.44 |
| 1985-89 | 0.50 | 0.13 | 0.06 | -0.71 | -0.61 | 1.46 | 0.42 | 0.13 | 3.82 | -4.45 | 3.90 | 0.03 |
| 1989-91 | -0.43 | 1.20 | -0.60 | -1.78 | 0.35 | 0.41 | 0.40 | -0.83 | -1.51 | -1.21 | -3.58 | -0.14 |
| **C. Exports** | | | | | | | | | | | | |
| 1967-70 | 0.18 | 0.00 | 0.00 | 1.52 | 1.17 | -1.01 | 0.20 | 1.13 | 0.54 | 0.67 | 0.28 | 0.50 |
| 1970-74 | 0.25 | 0.01 | 0.04 | 1.50 | 2.35 | 0.35 | 1.18 | 2.03 | 0.77 | 1.29 | 0.46 | 0.90 |
| 1974-79 | 0.79 | 0.00 | 0.08 | 0.79 | -0.26 | 0.81 | 0.41 | 1.54 | -0.08 | 1.19 | 0.31 | 0.58 |
| 1979-82 | 0.11 | 0.01 | -0.02 | -1.23 | -1.38 | 0.17 | -0.35 | -2.10 | -0.25 | -0.14 | -0.21 | -0.41 |
| 1982-85 | 0.14 | 0.03 | -0.08 | -0.53 | -0.51 | 0.61 | 0.84 | -0.14 | -0.28 | -1.61 | -0.39 | 0.03 |
| 1985-89 | 0.26 | 0.01 | 0.08 | 2.75 | -0.82 | 0.19 | 0.75 | 0.89 | -0.06 | 0.98 | 0.02 | 0.73 |
| 1989-91 | 2.11 | 0.11 | 1.59 | 4.62 | 2.76 | 2.14 | 2.73 | 5.09 | 0.80 | 4.68 | 0.88 | 2.60 |
| **D. Total growth** | | | | | | | | | | | | |
| 1967-70 | 4.69 | 9.17 | 7.00 | 7.36 | 5.37 | 11.77 | 10.04 | 8.57 | 10.20 | 19.03 | 26.09 | 8.74 |
| 1970-74 | 5.46 | 6.31 | 4.64 | 7.39 | 4.91 | 12.59 | 15.51 | 7.92 | 9.99 | 13.82 | 17.21 | 9.64 |
| 1974-79 | 5.46 | 6.68 | -4.22 | 3.00 | -0.23 | 4.83 | 3.23 | 5.26 | 2.88 | 4.87 | 7.04 | 4.03 |
| 1979-82 | 1.87 | 1.89 | 1.18 | -5.25 | -5.98 | 0.36 | -0.24 | 1.52 | -2.80 | -3.73 | -6.95 | -1.18 |
| 1982-85 | 2.64 | 3.54 | 9.03 | 0.43 | 7.12 | 4.83 | 5.33 | 2.52 | -1.06 | 0.90 | -0.64 | 2.98 |
| 1985-89 | 3.74 | 1.60 | -6.97 | 5.23 | 7.53 | 5.31 | 4.30 | 7.76 | 5.17 | 7.55 | 9.28 | 4.50 |
| 1989-91 | 0.75 | 0.13 | 8.62 | 3.27 | -0.36 | 7.81 | 4.47 | 3.69 | 0.63 | -1.12 | -11.08 | 2.15 |

SOURCES: Estimates based on DANE National Accounts. The gross value of production and imports include commercial margins. Imports also include duties. 1991 according to preliminary estimates of FEDESARROLLO.

Simultaneously, increasing public investment was reflected in a boom of non-oil public sector imports.

The stabilization program adopted in late 1974 generated a recession in 1975, particularly severe in the manufacturing sector. In the following years, growth resumed, but the rate of expansion of industrial production remained significantly below the record of the 1967-1974 boom (Figure 1.A). Starting in 1980, conditions faced by the manufacturing sector further deteriorated. In the following years, the economy entered the worst recession of the post-war period. Moreover, despite persistent stabilization efforts, price shocks and the spread of indexation practices were reflected in persistent inflation (Figure 2.A). By the early 1980s, the Colombian economy was thus faced with recession, inertial inflation, record fiscal deficits, booming balance of payments disequilibria and rapidly increasing external liabilities.

## C. Shifting external strategies (1983-1991)

The deterioration of economic conditions led the Betancur Administration, inaugurated in August, 1982, to a sharp turnaround in trade policy. The new Administration rapidly reversed more than a decade of gradual import liberalization. A series of tariff increases decreed from 1982 to 1984 raised the average nominal rate of protection from 32 to 49%, including tariff surcharges. Nonetheless, existing and newly decreed exemptions significantly diminished the effect of tariff rises, as the evolution of the average collected tariff indicates (Table 1).

QRs thus played a more important role in the protectionist backlash. The first transfer of items in the tariff schedule to the prior licensing regime, which took place in September, 1982, was rather moderate. As the drain of international reserves gained momentum in 1983 and 1984, the process accelerated. At the end of the process, in April, 1984, the free licensing regime had virtually disappeared and one sixth of the tariff schedule was

back in the reborn prohibited list. Simultaneously, the government recreated and progressively tightened the "import budget", generating a rapid increase in the excess demand for licenses.

Export subsidies were simultaneously increased, reaching by 1984 levels typical to the early 1970s, as the crawl of the peso accelerated. The global package had thus many similarities with the "mixed" strategy which the country had followed up to 1974. It was successful in generating an important recovery of industrial production (Figure 1.A) and simultaneously reducing current account disequilibria. However, the attempt to devalue the currency in real terms was checked by continued revaluation of the dollar. This fact, together with the severe loss of foreign exchange reserves and the increasing difficulties faced by the authorities in negotiating new international loans led to a radical change in economic policy in the second semester of 1984. In 1985 restrictive aggregate demand policies and a rapid crawl of the peso replaced the role which had been assigned since 1982 to QRs as the mechanism of balance of payments adjustment (Ocampo and Lora, 1987).

Devaluation was extremely successful in generating a strong effect on relative prices. It thus facilitated the moderate liberalization of the trade regime agreed with the World Bank in 1985. As it had been true in the early 1970s, most of the liberalization initially concentrated in reducing red tape and delays in approving licenses for non-competitive imports of intermediate and capital goods. After mid-1985, the prohibitive list was reduced to a few items and the free licensing regime progressively expanded to encompass one year later 36% of the tariff schedule (Table 1). The import budget was gradually increased, particularly in 1986, when the country experienced a short coffee boom. However, the proportion of import licenses rejected remained historically high up to 1988; in 1989, it finally returned to the levels typical of the late 1970s and early 1980s. Despite a significant liberalization, at the end of

the process, in 1989, less than 18% of the domestic production of tradable goods was subject to competition/form imports under the free licensing regime (Ocampo, 1990a).

As part of the policy shift, tariffs were significantly cut in 1985 (Table 1). However, as many exemptions were simultaneously eliminated, average collected tariffs were actually raised (Cubillos and Torres, 1987). Increases in the import surcharge decreed for fiscal reasons in 1985 and 1987 also enhanced aggregate tariff protection. Thus, a moderate liberalization of QRs, mostly for non-competitive goods, was accompanied by higher import duties, generating a net protectionist effect. Nonetheless, as had been true during the 1967-1974 boom, import liberalization was not a precondition for export expansion but rather a result of the normalization of balance of payments conditions.

As part of the reforms adopted in 1985, the Vallejo Plan was widened, to allow the importation of intermediate and capital goods for non-traditional export activities, even if goods were domestically produced. As a compensation, "indirect" exporters were also allowed access to the system. Other export incentives were cut from 1985 to 1989, partly as a reflection of policy decisions (the reduction of tax certificates and the increase in the interest rate charged by PROEXPO), but largely as the result of the inadequate growth of PROEXPO credit in the face of a new boom of non-traditional exports. In any case, despite the reduction of export subsidies and the liberalization of QRs, exchange rate policy was extremely effective in generating a devaluation of the effective exchange for both exports and imports. By 1986, both rates had amply surpassed their historical peaks (Table 1).

The 1984-1985 stabilization package had moderate contractionary effects, particularly on industrial activities. Under the favorable conditions created by the 1986 coffee boom, the economy returned to a more steady growth path. However,

industrial growth remained unstable and both GDP and industrial growth kept significantly below their 1967-1974 record. Finally, inflation tended to accelerate, with the industrial sector playing a leading role in the process (Figures 1.A and 2.A).

Frustration with the inability to return to rapid rates of growth with price stability generated a perception of the authorities that trade policy required a radical change towards an explicitly outward oriented strategy. More important than this factor was the ideological swing towards a classical market-oriented ideology and their rapid and somewhat unexpected penetration in Latin America. The new trade policy thus made part of a larger package of reforms, which included the partial liberalization of exchange controls, the privatization of port services, open access to direct foreign investment and a moderate liberalization of the labor market. The emphasis placed by the defenders of the new model on the exhaustion of "import substitution" was, nonetheless, misplaced, as the traditional ISI model had long been abandoned in Colombia and even the import substitution component of the "mixed" strategy had been downgraded since the early 1970s (see Sections II and IV.A).

A series of decisions taken since February, 1990, by the Barco, and followed by the Gaviria Administration, after its inauguration in August of that year, thus led to a rapid turnaround in trade and, particularly, import policy. By November of that year, QRs had been virtually eliminated, as tariffs and the import surcharge were significantly cut. By December, the government announced a tariff reduction schedule, which would bring the consolidated tariff and surcharges to an average slightly under 15% by 1994 (Garay, 1991, Ch. 1; Ocampo, 1990a; Hallberg and Takacs, 1991). As a result of strong inflationary pressures, the government decided in June and July to speed up the reductions planned for 1992, and in August those expected for 1993 and 1994. This meant that import duties were cut by two-thirds in 18 months. Export incentives were adjusted more gradually. However, credit subsidies were virtually eliminated

in October, 1990, and a reduction of the tax rebate was initiated in May, 1991 (Table 1), with the purpose of bringing it to an average level consistent with estimates of incidence of indirect taxes on non-traditional exports.

Simultaneously, in the meeting of the Andean Presidents at Galapagos in December, 1989, and their later rendezvous at La Paz, in November, 1990, the Andean Group experienced an equally radical change. In particular, the long-postponed liberalization of intra-regional trade was accelerated and was virtually completed in January, 1992 (July 1992 for Ecuador and Peru). They also decided, in Cartagena, in December, 1991, that a Customs Union will also be in place in 1992, with tariffs slightly lower than those adopted by Colombia in August, 1991.

To pave the ground for import liberalization, the crawl of the peso was accelerated since mid-1989, generating by 1990 a significant real devaluation, which undoubtly facilitated at a political level the trade reform. However, acceleration of inflation led to a new stabilization program in 1991, which included a moderate real appreciation of the peso and, as we have seen, the acceleration of tariff reductions programmed for 1992-1994, and a stringent fiscal and monetary policy. The combined effect of revaluation, liberalization and tariff reduction has been a massive revaluation of the import exchange rate and a more moderate revaluation of that applicable to non-traditional exports, which still stands, however, at a historically high level (Table 1).

### D. The structure of effective tariff protection

Despite swings in import policy, the traditional escalated structure established by the 1959 and 1964 tariff reforms remained relatively unchanged in the following decades (Martínez, 1986). The effective protection granted by the tariff and its evolution over time is difficult to assess on the basis of existing studies, for four different reasons: (1) few studies have tried to measure the "water" in the tariff; (2) few have

estimated the effect of existing exemptions on protection; (3) they usually exclude tariff surcharges from the calculations; and (4) they are generally estimated on the basis of the whole tariff, regardless of the fact that domestic production covers 40% or less of all items in the tariff schedule.

Table 2 summarizes existing estimates of effective protection to manufacturing activities. Sectoral rates have been weighted by 1979 values added to generate totals for traditional and late industries. Despite obvious differences in the methodologies used to estimate effective protection, several features stand out.

First, legal effective protection --i.e., that granted independently of exemptions and "water" in the protection system-- has been generally high. This fact is clearer when import surcharges are included and the calculations and the analysis is restricted to domestically produced goods. Moreover, although time comparisons are not reliable, effective tariff protection may have stood at a historical peak just before the recent liberalization. Even after the massive reductions decreed in 1990 and 1991, it still remained at a moderate 35%.

Secondly, legal effective protection has been generally higher for the traditional manufacturing sectors. However, a large proportion of the apparent dispersion between and among traditional and "late" industries is associated with goods which are not produced in the country. Thus, the relative effective protection of late industries is significantly higher when estimates refer only domestically produced goods. After the August 1991 reform, the theoretical average effective protection for those industries was 28% vs. 39% for traditional industries.

Thirdly, protection is significantly smaller if exemptions are taken into account; for such purpose, effective rates are estimated with average collected rather than with legal tariffs. Such exemptions include those benefiting the public sector

(eliminated in 1991), a variable list of "priority" private activities, imports from the Andean Group and the Latin American Integration Agreement and inputs for non-traditional exports (Vallejo Plan).

Finally, throughout the period of analysis, there has been substantial "water" in the tariff, particularly in traditional manufacturing sectors. On the contrary, it is likely that for some "late" industries, QRs have kept domestic/foreign price ratios above nominal tariff protection. Since many late industries produce intermediate goods, this has traditionally reduced even further the effective protection granted to traditional industries. The relation between price ratios and nominal protection has probably followed fluctuations of the real exchange rate. Thus, when the exchange rate has depreciated, the "water" has increased and contrariwise when it has appreciated. This implies that domestic industrial prices have a strong non-tradable component. Domestic dollar prices of traditional manufacturing goods do, in fact, show a strong negative correlation with the real exchange rate (Ocampo, 1990a).

Few studies have tried to measure the magnitude of "water" in the protection system. The study by Hutchenson (1973) for 1969, summarized in Table 2, indicated that tariff protection contained substantial water for traditional industries, while the contrary was true for a few late industries. On the contrary, the study by Fernandez et al. (1985), with data for 1983, a year of substantial currency overvaluation and harsh QRs, indicated that domestic/foreign price ratios were generally higher than those allowed by tariffs. The study concentrated, however, on late industries and did not carefully correct for commercial margins involved in the comparisons.

The most recent (unpublished) study, undertaken by Banco de la República in early 1989, concluded, on the contrary, that there was considerable "water" in the tariff. However, the analysis concentrated on a few sectors. The study found that

domestic/foreign price ratios fell substantially short of the nominal tariff for foodstuffs (8 vs. 53%), paper products (3 vs. 59%) and pharmaceuticals (-25 vs. 38%) and was only similar for autoparts (37 vs. 43%). This evidence is consistent with the lack of demand for most consumer goods when an auction system was temporarily adopted in 1990 as a transition to full import liberalization (Ocampo, 1990a; Hallberg and Takacs, 1991).

IV. DEMAND ASPECTS OF MANUFACTURING GROWTH
A. General links between domestic demand, external policy and industrial growth

Figures 1.B and 1.C show the major links between external policies and industrial performance in Colombia since 1967. Table 3 reproduces, in turn, the usual demand decomposition of sources of growth popularized by Chenery. As a whole, import substitution has not been an engine of manufacturing growth during this period. On the contrary, the aggregate import substitution coefficient (the ratio of domestic production for the domestic market to apparent domestic demand) has shown a generally downward trend. Exports have been a moderate engine, as reflected in the upward trend in the ratio of exports to production.

Both indices show, in turn, a strong cyclical pattern, closely associated with shifts in trade and exchange rate policies. In the early part of the 1967-1974 boom, domestic demand and, particularly, imports grew rapidly, largely as a result of the repressed demand for non-competing goods accumulated during the years of severe import and exchange controls. In the later part of the boom, the import substitution coefficient normalized. This factor, together with booming manufacturing exports, helped to sustain rapid manufacturing growth.

The mid-1970s experienced a radical change in the relation between external policies and industrial performance. Thus, as import substitution fell back, the export boom came to an end. The strongest impacts were felt, however, in the early 1980s,

when the accumulated effects of exchange rate revaluation, import liberalization and the reduction of export subsidies were combined with a strong world and Latin American recession and collapsing terms of trade for most Colombian exports. In 1980-1982, the direct contribution of external variables was an annual reduction of close to 4% in industrial production, most of it associated with the rapid reversal in import substitution.

It is important to notice that the strongest contractionary effects of trade polices coincided with the collapse of international coffee prices. Thus, they can hardly be associated with the "Dutch disease" effects of the coffee boom as such, which were rather mild, as the evolution of the industrial sector in 1975-1979 indicates. A stronger "Dutch disease" was thus a result of exchange rate and trade policies induced by the debt boom of the early 1980s.

The radical change in external policies adopted by the Betancur Administration, led to a rapid change in the contribution of external policies to industrial growth. In 1983-1985, manufacturing growth was basically associated with the rapid reversal of adverse trends in the import substitution coefficient typical of the early 1980s. As the coefficient normalized, the new export boom was felt, helping to sustain the new phase of industrial expansion. Moreover despite a dramatic contraction of the domestic demand for manufactures in 1991, the export boom which the Colombian experienced in 1990 and 1991 helped to sustain moderate industrial growth. Indeed, according to preliminary evidence, in 1991 the export coefficient of the manufacturing sector reached 12%, significantly above the 7.3% peak of the mid-1970s (Tables 3 and 4).

Despite the close association between external policies and industrial performance, domestic demand has continued to be the major determinant of manufacturing growth in the period under analysis. Thus, the significant slowdown of manufacturing production since the mid-1970s must be associated basically to

the deceleration of domestic demand, as a reflection of the slowdown in the rate of economic growth [2]. In fact, although the income elasticity of demand for intermediates has shown a small but statistically significant decline in the period under analysis, the demand for all producer goods has been income-elastic since 1967 (1.2 for intermediates and 1.5 for capital goods).

On the contrary, the household demand for manufactures has been characterized by a unitary elasticity. Such global estimate hides, however, contrasting trends of different consumer goods. The share of processed foodstuffs and beverages in household consumption has remained fairly constant over the past quarter century; that for tobacco, textiles, apparel and leather products has shown, on the contrary, a strong downward trend, particularly in the 1980s, whereas the demand for the other manufactured consumer goods (paper and printing, chemicals and durables) has been income-elastic. Overall, the share of manufactures in household consumption increased from 36.3% in 1967 to over 39% in 1976-1978, indicating that the growth in the demand for income-elastic manufactures overwhelmed the contraction in that for income-inelastic goods. Since the late-1970s, the latter prevailed, and such share declined to 36.9% in 1989. This evolution indicates that household consumption patterns have matured, reaching an Engel's turning point in the late 1970s. This fact has enormous implication for those manufacturing sectors for which, in contrast to historical patterns prior to 1967, domestic demand has ceased to be a driving force of industrialization [3].

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[2] It should be emphasized, however, that the usual Chenery decomposition exercices tend to overestimate the role of domestic demand, by excluding from the calculations the multiplier effects of export growth and import substitution. Ocampo (1990b) estimated the multiplier effects of import policies to have fluctuated between 1.6 and 2.1 in the late 1970s and in the 1980s.

[3] The downward decline in the demand for textiles, apparel and other income-inelastic manufactured consumer goods may be partly associated to the increasing demand for smuggled foreign

The downward trend of the relative price of industrial goods was interrupted in the late 1960s or early 1970s (Posada and Rhenals, 1988; Ocampo, 1992). Since then, relative industrial prices have shown a strong cyclical element with a slightly upward trend. Given the relatively high price-elasticity of the household demand for manufactured goods (-0.9 in 1967-1989), such trend has also had adverse effects on domestic demand and, thus, on industrial growth. Such fluctuations have been closely associated with the evolution of unit costs of production (Figure 2.B). Industrial mark-up have also exhibited significant cyclical variations (Figure 2.C). Strong upward pressures have been characteristic of the end of the 1967-1974 and the post-1983 recovery. Econometric evidence (not reported here) indicates, however, no important links between mark-ups and domestic demand and, on the contrary, a somewhat stronger effect of protection through price mechanisms (real exchange rate and tariffs) and QRs on the former variable. Nonetheless, the latter effects are much weaker than those of costs on industrial prices '/.

## B.  Sectoral effects of external policies

The effects of domestic demand, import substitution and exports have varied considerably among sectors (Table 3). The slowdown in the rate of growth of domestic demand since the mid-1970s had an adverse effect on many industrial branches, particularly textiles, paper, chemicals an non-metallic minerals. Since the late-1970s, this factor became widespread and most sectors actually experienced a significant contraction of

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goods. Evidence on the evolution through time of (the relatively widespread) smuggling activities is, however, imprecise; nonetheless, there is strong qualitative evidence that large-scale smuggling of consumer goods in the late 1970s and early 1980s reinforced the adverse effects of trade policy and external events on industrial production.

'/ One standard deviation of the import exchange rate (including tariffs and surcharges but excluding QRs) leads to a 1.8% rise in industrial prices (5% for metals and machinery). On the other hand, one standard deviation in the tariff equivalent of QRs leads to a 1.6% rise in prices (4% for chemicals and transport equipment).

domestic demand in either 1979-1982 or, particularly, the years of balance of payments adjustment, 1982-1985. Since then, demand has generally recovered but it has not reached yet the rates of growth typical of the 1967-1974 boom.

On the other hand, import substitution had been completed by 1967 in foodstuffs, beverages, tobacco, textiles, wood and non-metallic minerals; it was fairly advanced in paper, chemicals and metals and still very limited in machinery and transport equipment. Significant contributions of import substitution to economic growth were obtained in 1967-1974 in the latter two sectors, especially in transport equipment (Table 3). Since 1967 but, particularly, since 1974, there has been a general reversal of import substitution, particularly in textiles, chemicals, metals and machinery. Most sectors also experienced a sharp cycle of the import substitution coefficient in 1979-1985; such movements were particularly strong, however, for machinery and transport equipment (Tables 3 and 4).

Among the traditional manufacturing sectors, exports made the most significant contribution to growth in 1967-1974 in textiles, wood and non-metallic minerals. The latter two sectors show a disappointing export performance since the mid-1970s, except in very recent years. Textiles have, on the contrary, shown a strong cycle with an upward trend and by 1989 had the highest export ratio of the Colombian manufacturing sector. Foodstuffs and paper and printing also show a moderate contribution of exports to sectoral growth in different periods. Among late industries, there are contrasting trends between chemicals and machinery, on the one hand, and metals and transport equipment, on the other. Exports have shown an important dynamism in the former two sectors, particularly in the case of chemicals. This is, thus, the sector where late import substitution --particularly in the 1960s-- has been combined with export growth in the 1970s and 1980s. On the contrary, metals and transport equipment show a disappointing export performance.

Quantitatively, manufacturing exports have been dominated by foodstuffs, textiles and chemicals. Overall, these sectors made up two-thirds of industrial exports from 1967 to 1979 and three-fourths in the 1980s. Exports of foodstuffs have been the most stable but the least dynamic. Its share in total manufacturing exports has thus been anti-cyclical: it has tended to increase when the aggregate export coefficient declined, indicating that it has been less sensible to shifts in domestic policies and international demand. Textiles display, on the contrary, an upward trend and a strong pro-cyclical performance. Finally, chemicals exhibit a strong upward trend and a less marked pro-cyclical pattern (Table 4).

Existing studies indicate that both short-term and structural factors have had significant effects on non-traditional export performance. The short-term determinants are relative price shifts and the dynamics of international markets, with the emphasis on one or the other depending on the author (Echavarría, 1982; Villar, 1983; Botero and Meisel, 1988) [5]/. On the other hand, three structural factors are particularly important. Overall, manufacturing exports are relatively natural-resource and unskilled labor-intensive (Thoumi, 1979; Villar, 1983). However, exporting firms are relatively larger and more capital-intensive than non-exporting firms in each sector (Echavarría and Perry, 1981; Villar, 1983). Finally, a few capital-intensive and human capital-intensive sectors have, nonetheless, been successful in combining import substitution with an important penetration in regional markets.

Factor-intensity is also closely associated with the destination of manufacturing exports. Thus, most of the natural-resource intensive exports (foodstuffs, wood and basic metals) depend strongly on markets from DCs (78% in 1990). Also, more than half of textile and non-metallic mineral exports are destined to DCs. Paper and printing exports are in an

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[5]/ A brief summary of earlier estimations can also be found in the latter study.

intermediate position, with DCs and regional markets absorbing an approximately equal share of exports. Finally, in the case of chemicals and machinery, regional markets are dominant (70% in 1990).

To explore the short-term determinants of manufacturing export performance, Table 5 summarizes the results of eclectic export functions. Sectoral export coefficients are the dependent variable in all cases. Following traditional estimations, both current and lagged relative export prices are included as explanatory variables. Given the market fragmentation typical of manufactured goods, the growth of world trade is also included as an independent variable in the regressions; the index used is a weighted average of real imports of OECD and Latin America. The dynamic economies of scale emphasized by new trade theories are captured by an index of "export experience", which is defined as accumulated exports since 1951, assuming a 10% annual depreciation of "experience" (20% coefficient was also tried, with somewhat poorer results); experience is measured relative to current exports. Finally, to capture the "anti-export bias" generated by import policies, both the average collected tariff and the tariff equivalent of QRs are also included as explanatory variables.

For non-oil manufacturing as a whole, relative prices, the growth of world trade and export experience make statistically significant contributions to export performance. On the contrary, import policies do not play any important role. Among the three dominant sectors, foodstuffs show an inertial pattern with no sensibility to any of the variables included in the estimations. Textile exports depend basically on relative prices and world demand, with experience playing no role. Chemicals show a strong dependence on world trade and experience and a somewhat weaker dependence on relative prices.

Relative prices also play an important role in the dynamics of the exports of non-metallic minerals, machinery and transport

## TABLE 5
### DETERMINANTS OF EXPORT COEFFICIENTS
(t-statistic in parenthesis; long-run standarized coeficient in brackets)

| Sector a/ | Constant | Relative prices | | Growth of world trade | | Export Experience | Average Tariffs | Tariff Equivalent of QRs | First order autocorre-lation | R2 | DW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Current | Lagged | Current | Lagged | | | | | | |
| Foodstuffs b/ (1967-89) [0.0623] | 0.0780 | | | | 0.0113 (0.227) [0.004] | | -0.0519 (-0.841) [-0.002] | -0.0242 (-0.559) [-0.002] | | 0.1741 | 2.383 |
| Beverages (1972-89) [0.001] | -0.0002 | | 0.0003 (0.860) [0.000] | | 0.0001 (1.001) [0.000] | 0.0002 * (1.672) [0.000] | | | 0.6199 * (1.832) | 0.7710 | 1.635 |
| Tobacco (1972-89) [0.003] | 0.0046 | | | | 0.0084 (0.797) [0.003] | 0.0006 (1.365) [0.001] | -0.0045 (-0.227) [0.000] | -0.0173 * (-1.652) [-0.001] | | 0.1197 | 1.661 |
| Textiles, apparel and leather (1967-89) [0.099] | -0.0508 | 0.0798 * (1.936) [0.014] | 0.0753 * (1.655) [0.013] | | 0.1107 (1.443) [0.035] | 0.0007 (0.068) [0.000] | | -0.0708 (-0.652) [-0.005] | | 0.7517 | 1.613 |
| Wood and products (1967-89) [0.094] | 0.1603 | 0.0223 (0.323) [0.003] | | 0.2713 * (1.441) [0.085] | | 0.0251 (0.528) [0.007] | -0.4292 * (-2.327) [-0.019] | -0.1741 (-1.079) [-0.011] | | 0.1618 | 2.122 |
| Paper and printing (1967-89) [0.055] | 0.0165 | | 0.0151 (0.484) [0.002] | 0.0583 (0.860) [0.018] | | 0.0109 (0.801) [0.008] | | | 0.5796 * (2.736) | 0.3947 | 1.485 |
| Chemicals (1967-89) [0.050] | -0.0436 | 0.0593 * (3.065) [0.007] | | 0.0941 * (2.864) [0.030] | 0.0732 * (2.315) [0.023] | 0.0307 * (8.469) [0.022] | | -0.0395 (-1.422) [-0.003] | | 0.8274 | 2.069 |
| Non metallic minerals (1968-89) [0.118] | -0.0304 | 0.2125 * (4.431) [0.029] | | | 0.1560 * (2.497) [0.049] | | | | 0.8066 * (5.855) | 0.8504 | 1.148 |

Table 5 (Cont.)

| Sector a/ | Constant | Relative prices | | Growth of world trade | | Export Experience | Average Tariffs | Tariff Equivalent of QRs | First order autocorrelation | R2 | DW |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Current | Lagged | Current | Lagged | | | | | | |
| Metals and products (1967-89) [0.035] | 0.0694 | | | | 0.0777 * (2.227) [0.024] | | -0.1384 * (-3.182) [-0.006] | -0.0566 * (-1.875) [-0.004] | | 0.3731 | 1.837 |
| Machinery (1968-89) [0.065] | -0.0589 | | 0.1575 * (2.228) [0.008] | | 0.2025 * (3.423) [0.064] | 0.0175 * (3.459) [0.016] | | -0.3191 * (-4.477) [-0.021] | 0.2979 * (1.625) | 0.7485 | 1.961 |
| Transport equipment (1967-89) [0.020] | -0.0002 | 0.0339 * (2.320) [0.006] | | | 0.0327 (0.717) [0.010] | | | -0.0908 * (-2.264) [-0.006] | | 0.3226 | 2.324 |
| Non oil manufacturing (1967-89) [0.059] | 0.0119 | | 0.0459 * (2.782) [0.006] | | 0.0507 * (1.921) [0.016] | 0.0111 * (3.073) [0.005] | | -0.0351 (-0.953) [-0.002] | | 0.7202 | 1.421 |

a/ Period coverd by regression in parenthesis; mean value of dependent variable in brackets
b/ Regression included a dummy variable for 1977
*/ Significantly different from zero at 90% confidence level

equipment, and the dynamics of world trade in those of wood, non-metallic minerals, metals and machinery. Export experience also influences the exports of machinery (this is also true of beverages and tobacco, but they have insignificant export ratios). This result, together with the important role which this variable plays in chemical exports indicate that dynamic scale economies are primarily important for late industries heavily dependent on regional markets.

On the contrary, the role of the "anti-export bias" of the trade regime on export performance is limited. As indicated, they do not come out as a statistically significant determinant of total non-oil manufacturing exports. They play a significant role only in sectors which are relatively secondary for aggregate export performance. Thus, high tariffs deter exports of wood and metals, and QRs those of tobacco, metals, machinery and transport equipment. There is also a statistically weak effect of QRs on the exports of chemicals.

As a result of demand factors affecting sectoral performance, the industrial structure of the country has experienced some important changes since 1967. During the 1967-1974 boom, the sectors which increased their share in industrial value-added were thus which underwent additional import substitution --paper and printing, machinery and transport equipment-- and beverages. From 1974 to 1983, the rising share of late industries in value added was interrupted and, in some sectors, particularly metals, experienced an important retrogression. Affected by the slow growth in domestic demand and falling export coefficients, textiles faced an ever more pronounced relative decline. Curiously enough, as a result of a better domestic demand performance, some of the most traditional industries, foodstuffs and beverages, increased their share in industrial production. Finally, since 1983, those sectors experiencing rising export coefficients have been to increase their share in production. In particular, the relative decline

of textiles has been reversed, as chemicals have resumed their long-run rising share in industrial production (Table 4).

V.    SUPPLY DETERMINANTS OF INDUSTRIAL GROWTH

A.    Productivity performance

A Verdoorn association between industrial growth and productivity performance is shown in Table 6. At an aggregate level, Total Factor Productivity (TFP) increased at a rate over 1.2% a year during the 1967-1974 boom. The slowdown of industrial growth during the coffee bonanza of the 1970s and the recession which followed was reflected in a moderate decline of TFP. Since 1983, the partial recovery of industrial growth has been reflected in a new phase of TFP growth, at 0.9% a year. Although this rate is slower than that achieved during the industrial boom of the late 1960s and early 1970s, its contribution to total growth has been higher (23% vs. 13% during the boom).

Changes in capacity utilization have reinforced the effects of TFP, with an even clearer association with industrial growth. Increases in utilization during the 1967-1974 boom were particularly strong */. The joint effect of these two factors was an impressive growth of productivity during this period -- 3.3% a year. On the contrary, falling utilization rates (particularly in the early 1980s) magnified the moderate fall of TFP in 1975-1982, leading to an aggregated productivity reduction of 1.0% a year. Since 1983, the effects of rising capacity utilization have been positive but moderate.

At a sectoral level, TFP shows a more erratic pattern, with major sectoral differences across all sub-periods of analysis. Nonetheless, it also reflects the global Verdoorn trend. Thus, 1967-1974 was a period of rising productivity in all sectors. The

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*/ For the industrial sector as a whole, capacity utilization is estimated to have increased from 66.9% in 1967 to 75.8% in 1970 and 87.5% in 1974. Evidence of considerable excess capacities in the 1960s and their rapid reduction during the boom are summarized in Thoumi (1978). See also estimates for 1970 in DNP (1971).

1974-1982 period shows, on the contrary, a mixed pattern, with about half the sectors showing positive and half negative productivity growth. Since then, productivity performance has been positive again in most sectors.

Few studies have explored the determinants of productivity growth in the Colombian manufacturing sector. The early work by Dudley (1983) found evidence of strong learning effect on labor productivity in the metal-products sector in the 1960s, with this variable explaining annual productivity increases of 2 to 3% a year. On the other hand, Sandoval (1982) with data for 51 firms in the period 1966-1975 found a close association between labor productivity and production and no relation with (a relatively poor indicator of) R&D. The more recent work by Roberts (1988) explored the determinants of TFP growth with sectoral data for 1977-1983. He also found a strong Verdoorn effect (with a 1% growth being reflected in an increase of TFP of over 0.4%), as well as a positive impact of rising import shares on TFP and adverse effects of higher concentration ratios. The latter two effects were, however, quantitatively weaker than the growth-productivity link [7]. On the contrary, Ocampo (1990b) found no statistically significant relation between import penetration and labor productivity with quarterly data for nine industrial sectors in 1976-1987, except in chemicals.

A more recent study by Echavarría (1990) explored these and other relations with cross-section data for close to 2.600 firms in 1974-1979 and 1979-1987. For both periods, he found a very high Verdoorn coefficient (in the order of 0.9) and evidence that productivity growth is higher for older, national firms. For 1974-1979, he also found results similar to Roberts' regarding the effects of import competition and industrial concentration on productivity, as well as a positive link between exports and

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[7] Thus, according to the results of this author, slower economic growth can explain a difference in TFP of 4% a year when comparing 1977-1980 and 1980-1983, whereas rising import shares can only explain a difference of TFP growth of 0.2% a year in the same period.

the latter variable. On the contrary, for 1979-1987, some of these relations came out with the opposite sign. For the earlier period, he also found evidence of a positive link between capital intensity and productivity. The effects of all these additional variables is, nonetheless, quantitatively weak, as a simple Verdoorn relation explains close to 88% of the variance in productivity performance across firms.

The close relation between economic growth and productivity is confirmed in Table 7. This table shows the econometric determinants of TFP using pooled data for the eleven sectors considered in this study in the six sub-periods contemplated in Table 3. The exercise explores the effects of economic growth, industrial concentration and trade policies on TFP. The second of these variables is measured as the weighted 4-digit concentration ratio in 1984, according to Misas (1989). Trade policies are measured alternatively by the real exchange rate for imports (including tariffs and surcharges, but excluding QRs) and indicators of QRs, and by the contribution of import substitution and exports to growth according to the Chenery growth exercise.

The results confirm the central role played by Verdoorn effects on TFP performance in the Colombian manufacturing sector. A simple regression using value added as the only explanatory variable explains, by itself, most of the variance in TFP growth. The estimated coefficients for this variable indicate that a 1% growth in value added is reflected in TFP growth of 0.3%. This coefficient is, thus, lower than those estimated by Echavarría and Roberts. The difference can be explained, however, by the fact that neither of these authors adjusted capital stocks by capacity utilization; the problem may be particularly severe in the study by Roberts, which refers to a short period of high instability of industrial growth. Indeed, using the same data but estimates of TFP unadjusted by capacity utilization, the estimated coefficient fluctuates between 0.5 and 0.6 --i.e., in the intermediate range between those of the aforementioned authors.

TABLE 6
SOURCES OF GROWTH, SUPPLY SIDE
(Value-added at market prices)

| | Foodstuffs | Beverages | Tobacco | Textiles, Apparel and Leather | Wood and products | Paper and Printing | Chemicals | Non-metallic minerals | Metal and products | Machinery | Transport Equipment | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A. Total factor productivity** | | | | | | | | | | | | |
| 1967-74 | 0.14 | 4.10 | 3.66 | 0.37 | 0.23 | 2.22 | 0.27 | 2.67 | 0.05 | 2.28 | 8.32 | 1.23 |
| 1974-82 | -2.24 | 1.00 | 0.24 | -1.41 | -1.20 | -0.55 | -0.76 | 1.17 | 0.07 | 0.26 | -1.66 | -0.24 |
| 1982-89 | 1.36 | 2.05 | 0.78 | 0.95 | 5.29 | 0.06 | 2.66 | 1.10 | -0.67 | 1.71 | 1.42 | 0.93 |
| **B. Capacity utilization** | | | | | | | | | | | | |
| 1967-74 | 1.88 | 2.81 | 2.29 | 2.29 | 0.09 | 3.51 | 0.90 | 1.26 | 1.26 | 2.39 | 3.88 | 2.05 |
| 1974-82 | 0.79 | -1.06 | -2.70 | -0.54 | 0.72 | 1.11 | -0.31 | -1.27 | -1.45 | -0.98 | -1.14 | -0.79 |
| 1982-89 | -0.96 | 0.38 | 0.74 | 0.74 | -1.51 | 1.57 | 0.13 | 0.26 | 0.66 | 0.22 | 2.12 | 0.28 |
| **C. Labor** | | | | | | | | | | | | |
| 1967-74 | 1.89 | 1.74 | 0.64 | 3.42 | 2.46 | 2.79 | 3.60 | 1.72 | 4.09 | 7.00 | 1.33 | 2.89 |
| 1974-82 | 0.89 | 2.21 | -0.75 | -0.37 | -0.97 | 0.37 | 1.18 | 0.29 | 0.02 | 0.63 | 0.97 | 0.45 |
| 1982-89 | 0.19 | -1.17 | -2.24 | 0.48 | 1.89 | 0.31 | 0.03 | 0.20 | -0.78 | 1.35 | 0.35 | 0.27 |
| **D. Capital** | | | | | | | | | | | | |
| 1967-74 | 3.43 | 2.89 | 0.37 | 2.02 | 3.20 | 3.27 | 4.26 | 2.38 | 3.15 | 1.67 | 4.88 | 2.96 |
| 1974-82 | 5.53 | 2.28 | -0.54 | 1.55 | 0.41 | 2.78 | 2.49 | 3.55 | 1.80 | 2.95 | 2.92 | 2.69 |
| 1982-89 | 3.26 | 1.06 | 0.68 | 1.70 | 1.66 | 3.30 | 1.74 | 3.78 | 3.40 | 1.78 | 1.32 | 2.58 |
| **E. Total growth** | | | | | | | | | | | | |
| 1967-74 | 7.35 | 11.54 | 6.96 | 8.11 | 5.99 | 11.79 | 9.02 | 8.02 | 8.56 | 13.34 | 18.40 | 9.12 |
| 1974-82 | 4.97 | 4.43 | -3.76 | -0.76 | -1.04 | 3.72 | 2.61 | 3.74 | 0.44 | 2.86 | 1.09 | 2.12 |
| 1982-89 | 3.85 | 2.31 | -0.05 | 3.87 | 7.32 | 5.23 | 4.57 | 5.33 | 2.61 | 5.06 | 5.21 | 4.06 |

SOURCES: See text and Appendix.

TABLE 7
DETERMINANTS OF TOTAL FACTOR PRODUCTIVITY GROWTH, 1967 - 1989
(t-statistic in parenthesis; standarized coefficient in brackets)

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Constant | -0.006 (-1.49) | -0.035 * (-2.09) | -0.047 (-1.54) | -0.003 (-0.78) | -0.027 * (-1.66) | -0.026 (-1.59) |
| Growth of value added | 0.355 * (6.48) [0.020] | 0.360 * (6.70) [0.020] | 0.332 * (5.39) [0.018] | 0.297 * (5.19) [0.017] | 0.307 * (5.38) [0.017] | 0.338 * (5.37) [0.019] |
| 4-digit concentration radio | | 0.049 * (1.79) [0.005] | 0.049 * (1.75) [0.005] | | 0.041 (1.50) [0.004] | 0.038 (1.41) [0.004] |
| Real import exchange rate | | | -0.001 (-0.05) [-0.000] | | | |
| Tariff equivalent of QRs | | | 0.084 (1.24) [0.004] | | | |
| Contribution of import substitution | | | | 0.169 * (2.49) [0.008] | 0.155 * (2.27) [0.007] | 0.139 * (2.00) [0.006] |
| Contribution of exports | | | | | | -0.415 (-1.15) [-0.004] |
| R2 | 0.420 | 0.451 | 0.467 | 0.458 | 0.497 | 0.509 |

*/ Statistically different from zero at 95% confidence level

SOURCES: Pooled data results. See text. Productivity estimates have been adjusted by capacity utilization.

On the contrary, the effects of trade variables and domestic concentration are contrary to Roberts' results for 1977-1983. In particular, both import substitution and the 4-digit concentration ratios have positive effects on TFP, which are particularly strong for the first of these variables. The tariff equivalent of QRs comes also with a similar sign, but its statistical significance is weak. Finally, the contribution of exports comes out with a negative but statistically insignificant coefficient.

These results, together with those of former studies, indicate that Verdoorn effects dominate TFP performance in the Colombian manufacturing sector. This may interpreted in the sense that TFP is largely a dependent rather than an independent variable, with the demand variables analyzed in Part IV playing the dominant role in industrial growth. It also means that trade policy will only have a positive effect on productivity if it also has an expansionary effect on domestic production. On the contrary, the direct effects of trade variables and domestic concentration on TFP are weaker and have the opposite sign to that suggested by defendants of domestic and external competition as a source of productivity enhancement.

## B.   Labor and capital

Industrial employment grew at a very healthy rate during the 1967-1974 boom (6.6% a year --Figure 3.A). As a result, employment contributed with a 2.9% growth, according to the usual Solow growth exercise (Table 6). Wages also increased in real terms in the early part of the boom, but then lagged in the face of rising inflation in 1973 and 1974 (Figure 3.B). On the contrary, since the mid-1970s, employment performance in the Colombian industrial sector has been dismal. It increased by only 15% between 1974 and 1979, declined sharply to 1985 and then partly recovered in the following years. By 1989, however, it was only 10% above 1974 levels. As a result, the contribution of employment to industrial growth has been very low since the mid-1970s. Real wages show the opposite trend: they rose from the
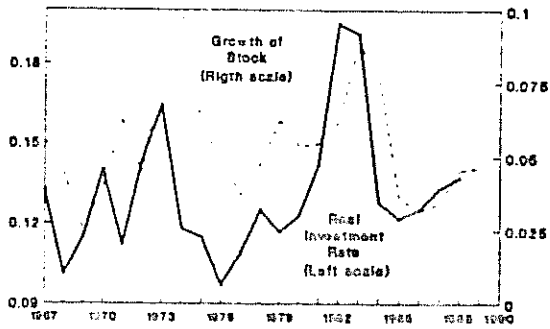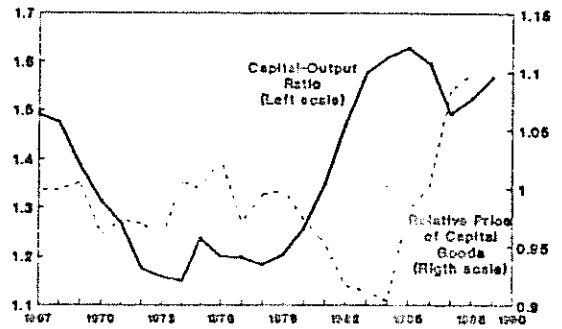
# FIGURE 3

### A. Industrial Emplyment
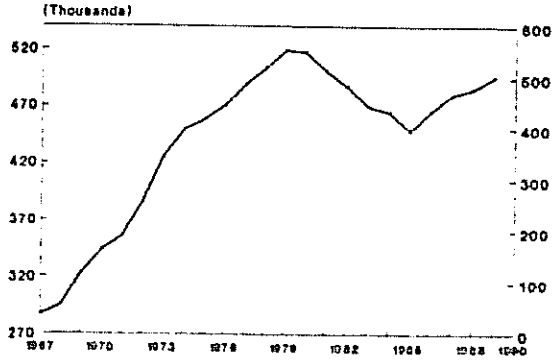


### B. Real Industrial Wages (1975=1)
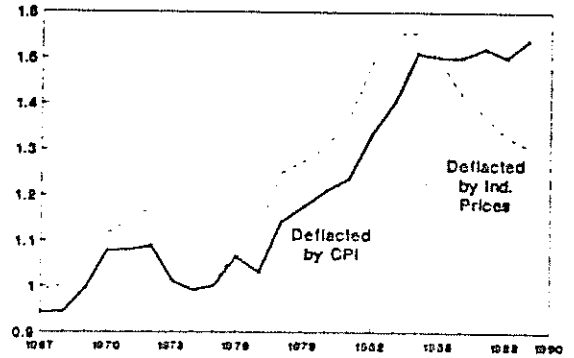


### C. Real Investment Rate and Rate of Growth of the Capital Stock



### D. Relative Prices of Capital Goods and Capital Output Ratio

mid-1970s to the mid-1980s, but then stagnated, if deflated by
the CPI, and declined in terms of industrial prices. Since the
elasticity of the demand for labor to real wages is low (-0.1 to
-0.2 according to existing studies --Misión de Empleo, 1986;
Reyes, 1987), real wages have only exercised a weak effect on
employment relative to the traditional Keynesian effect of
economic activity on the latter variable.

Both the evolution of industrial employment and detailed
analysis of labor market conditions (see, for example, Misión de
Empleo, 1986) indicate that, despite unionization and legal
restrictions on mobility, the industrial labor market is
relatively flexible in Colombia. Moreover, unionization in the
large scale manufacturing sector has experienced a long-term
decline in the period under analysis: from more than 60% in the
mid-1960s to 27% in the second half of the 1980s [*]. On the
other hand, the 1990 labor reform eliminated the major legal
restrictions on labor mobility.

Whereas the contribution of labor to industrial growth has
been secondary since the mid-1970s, that of capital has been
larger and steadier --from 2.6 to 3.0% throughout the period of
analysis (Table 6). Capital accumulation shows, nonetheless, two
discernible peaks, in the early 1970s and in the early 1980s
(Figure 3.C). The nature of these investment booms was, however,
quite different. The earlier one was clearly a reflection of the
accelerator mechanism, and was thus consistent with falling
capital-output ratios. On the contrary, that of the early 1980s
was induced by the low relative price of capital goods and thus
led to a sharp increase in the global capital-output ratio
(Figure 3.D).

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[*] For the figure on workers affiliated to unions according
to the union censuses of 1984 and 1990, see Ministerio del
Trabajo, Boletín de análisis y estadísticas laborales, No. 41,
July-December, 1989. These figures have been compared with
factory employment according to DANE Manufacturing Surveys.

Given the high import content of industrial machinery and equipment, the low relative price of capital goods in the early 1980s was largely associated with the real appreciation of the peso. Thus, the high costs of revaluation on the demand side (see Part IV above) were somewhat compensated by its favorable effects on capital accumulation. To a large extent, the most recent industrial recovery was facilitated by investment in previous years. Indeed, real devaluation has had an adverse effect on industrial investment. Nonetheless, the rate of capital accumulation showed a renewed upward trend from 1986 to 1989 (Figure 3.C) which, according to FEDESARROLLO's Entrepreneurial Surveys, was only interrupted by the severe domestic recession of 1991.

Investment financing also experienced substantial changes in the period under analysis. Three major phases in the evolution of the financial structure of industrial firms can be differentiated (Sandoval, 1983; Chica, 1984-85; Ocampo, 1989; Acosta, 1991). The first, which coincides with the 1967-1974 boom, was a period of rising dependence on development financing. To a large extent, this period can be regarded as a continuation of trends which were discernable in the 1960s (see Section II).

The second is a phase of high debt financing and risky financial deepening on both sides of the balance sheets of productive firms. This process was to a large extent determined by the moderate financial liberalizations of 1974 and 1979, the financial innovations induced by harsh monetary control during the coffee boom years and the collapse of the household demand for equity in the mid-1970s. As this process implied increasing reliance on short-term commercial financing, recession in the early 1980s was accompanied by a severe financial crisis of manufacturing firms. This process was, in fact, part of a larger financial collapse, which led to a wave of nationalizations of banks and other intermediaries.

As a result of the crisis, a major financial restructuring of manufacturing firms has take place since 1983. Reliance on debt-financing has experienced a considerable decline. Tax legislation and rising interest rates on development credits have encouraged but it is unclear whether they have been the major determinants of this trend. As reduced debt financing has not been accompanied by a recovery in equity financing, reinvestment of profits has become the major source of investment financing. Indeed, the increase in profit margins since 1983 may be seen as the way by which industrial firms have been able to reduce debt financing without a recovery in the demand for equity. .

VI.   CONCLUSIONS

The evidence presented in this paper indicates that import substitution has played a moderate role in industrial development in Colombia since 1967. The unique reliance on ISI was abandoned more than three decades ago and IS actually became a villain of economic policy since the early 1970s. Up to the 1991 tariff reform, this policy stance did not lead, however, to major reductions in the high effective tariff protection rates inherited from the period of ISI.

Throughout the past two decades, both IS and exports have followed a similar cycle, associated with shifts in external conditions and accompanying exchange rate movements, with trade policies playing a reinforcing role. Neither high tariff protection nor QRs have been a major obstacle to rapid manufacturing export growth when exchange rate policies have been favorable (1967-1974 and since 1985). Major exports have also been strongly affected by fluctuations in world market demand and, those with heavy dependence on regional markets (chemicals and machinery), to important dynamic scale economies.

Over the past quarter century, manufacturing production has, nonetheless, continued to depend mainly on domestic demand fluctuations generated by macroeconomic events. Engels' turning points were also experienced by some sectors in the late 1970s.

Finally, productivity performance has been subject to a strong Verdoorn pattern, with positive links to import substitution and domestic industrial concentration. Employment was dynamic during the 1967-1974 boom but has played a rather secondary role in industrial growth since the mid-1970s. Capital accumulation has shown a steadier contribution, subject, nonetheless, to a strong cyclical pattern associated with economic activity and relative prices.

## APPENDIX
### A brief note on sources and definitions

For the purpose of this paper, the industrial sector excludes coffee hulking, meat processing and oil derivatives. Production is measured alternatively by GDP at market prices or the gross value of industrial production. Prices are measured by the implicit deflator of the latter variable. Productivity changes are estimated with Translog production functions and adjusted by capacity utilization. Employment refers to permanent employment up to 1985 and to the permanent equivalent of total employment since then. Capital stocks are calculated using capital-output ratios estimated for 1951 by CEPAL (1957) and real investment series, assuming a depreciation rate of 4% a year.

Data used combines three different sources. Production, value added and cost estimates come from DANE National Accounts, whereas employment and investment series are taken from DANE Annual Manufacturing Surveys. Capacity utilization rates for 1973 and since 1980 are taken from FEDESARROLLO's Entrepreneurial Surveys (see the several issues of Coyuntura Económica for the surveys of the 1970s, and Indicadores de la Actividad Productiva for those of the 1980s); the utilization rate for beverages, tobacco and transport equipment in 1973 is taken from Thoumi (1978). Rates refer to utilization during the fourth quarter of· each year (the peak seasonal rate), weighted by the production of each firm. With original data from the Surveys, such weighted utilization rates were estimated for 1980 and 1987 and the published unweighted series adjusted accordingly. Prior to 1973 and for 1974-1979, utilization rates are estimated on the basis of sectoral output-capital ratios, adjusted for their trends during the period of analysis.

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