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A CRISIS IN THE CONDITIONS OF INDUSTRIAL ACCUMULATION: THE STAGNATION OF COLOMBIAN MANUFACTURING: 1974-1982.

Ricardo Chica-Avella
Wolfson College

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To my parents and to
Ma Camila and Juan Ricardo

Fedesarrollo : Los Andes. Enero 1992. $10.000

I declare this dissertation is not the same as any that I have submitted for a degree at any other University, and its contents are the result of my own work and not the outcome of work done in collaboration. This dissertation does not exceed the 80.000 words limit prescribed by the Degree Committee of the Faculty of Economics.

ABSTRACT

A CRISIS IN THE CONDITIONS OF INDUSTRIAL ACCUMULATION: THE STAGNATION OF COLOMBIAN MANUFACTURING: 1974-1982.

Ricardo Chica-Avella

The dissertation provides an explanation of the stagnation of Colombian manufacturing in terms of the deterioration of the conditions of industrial accumulation. The analysis focuses, in accordance with a Post Keynesian Structuralist framework, on the contribution of financial, demand and profitability factors. A survey of the theoretical mechanisms at work in each of these aspects of the conditions of industrial accumulation is presented at the beginning of each of the corresponding chapters. The analysis begins with an econometric investigation of a flexible accelerator and profits-finance model of investment. Econometric estimates of the structures in which those factors operate are also presented as part of their analyses.

The deterioration of financial conditions is shown to be the result of the combination of financial reform, the stabilization policy which followed Colombia's coffee export boom, and the resulting financial distortions. The analysis then concentrates on the deterioration of the conditions of demand and profitability. The former is explained by the inability of domestic demand to compensate for the reversal of the import substitution process, and the decline of manufactured exports. The deterioration of profitability is shown to be the result of a squeeze of firms pricing mark-ups and a stagnation of productivity growth.

The crisis of industrial accumulation is explained by a combination of *conjunctural* and *structural* factors related to the evolution of the Colombian economy, and to the economic policy implemented during the period. Some of these factors operated through demand mechanisms and some through supply mechanisms. On the demand side, a succession of *conjunctural* elements, including the deterioration of the real consumption wage, the poor export performance linked to the external crises, the Dutch disease syndrome, and the liberalization of imports, compounded *structural* factors. These comprise the exhaustion of the Import Substitution strategy, and the narrowness of the internal market arising from highly unequal income distribution and the stagnation of agricultural supply. On the supply side the *conjunctural* factors consist of cost inflationary pressures, and the financial crisis of the beginning of the eighties. The *structural* factors are the stagnation of productivity and the consequent erosion of competitiveness, as well as the lack of financial resources implied by the financial adjustments of the seventies.

The dissertation concludes that a succession of *conjunctural* exogenous demand factors were at work in the context of a *structural* deterioration of productivity growth due to endogenous supply factors. This interaction of demand and supply factors is further emphasized as the deterioration of productivity growth is traced back to a lack of innovative investment related to the stagnation of demand. Similarly, it is argued that the competitive weakness of the manufacturing sector revealed the inability of the entrepreneurs to adjust to the new requirements posed by the neoliberal policy, and the new macroeconomic and external conditions.

TABLE OF CONTENTS

Preface

1. Introduction. 1

1.1. The industrial crisis and its context. 1

1.2. The structure of the analysis. 16

2. Investment and its finance. 30

2.1. Theoretical framework. 30

2.2. The determinants of investment dynamics. 42

2.3. The deterioration of financial conditions. 45

Appendix. 52

3. Demand conditions: domestic demand and foreign trade. 62

3.1. Theoretical framework. 62

3.2. Demand conditions. 86

3.3. The stagnation of domestic demand for manufacturing production. 88

3.4. Imports liberalization and exports deterioration. 108

3.5. Conclusion. 129

Appendix. 132

4. Profitability: profit margins and productivity. 163

4.1. Theoretical framework. 163

4.2. The profitability crisis. 180

4.3. The deterioration of the profit margin. 190

4.4. Productivity stagnation. 214

4.5. Conclusion. 216

Appendix. 218

Conclusion 240

Bibliography 258

PREFACE

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A substantial part of this dissertation is devoted to summarizing and reviewing theoretical literature relevant to the analysis of a crisis in the conditions of industrial accumulation in a developing economy. In this respect the author's contribution is twofold. First, various analytical pieces are integrated in a framework providing an analytical foundation for the Neo-structuralist approach adopted for the analysis of the problem. Second, original formal illustrations of elements of the argument are introduced in sections 2.1. on the disequilibrium model of investment and 4.1. on the determinants of profitability, and in Appendixes A.3.1., A.3.2., A.4.1., and A.4.2.

LIST OF TABLES

Table		Page
1.1.1.	Sector Share of GDP.	5
1.1.2.	Economic Cycle.	5
1.1.3.	Terms of Trade.	5
1.1.4.	Macroeconomic Balance.	6
1.1.5.	Test for Structural Change of Trends.	6
1.1.6.	Industrial Growth.	10
1.1.7.	Growth and Composition of Production.	11
1.1.8.	Growth and Composition of Investment.	12
A.1.1.	International Trade.	22
A.1.2.	Trade Policy.	23
A.1.3.	Industrial Structure: Sectors Share of Value Added.	23
A.1.4.	GDP Growth and Composition.	24
A.1.5.	Price Indexes and Inflation.	25
A.1.6.	Production by Sectors 1975, 1991.	26
A.1.7.	Investment by Sectors 1974, 1979.	26
2.2-1.	Investment Function.	43
2.3-2.	Financial Structure of Manufacturing Firms.	49
3.2-1.	Sources of Growth.	88
3.3-1.	Share of Labour in Total Income and by Sectors.	92
3.3-2.	Distribution of the Coffee Boom.	93
3.3-3.	Relative Prices Agriculture-Industry. Rate of Inflation.	93
3.3-4.	Rates of Growth of GDP. Sectors Share of GDP.	94
3.3-5.	Monetary Statistics. Fiscal Statistics.	94
3.3-6.	Domestic Demand for Light Consumption and Consumer Durables.	101
3.3-7.	Domestic Demand for Intermediate Goods and Capital Goods.	102
3.3-8.	Domestic Demand for Manufacturing.	103
3.4-1.	Evolution of Exchange Rate.	112
3.4-2.	Evolution of Protection.	112
3.4-3.	Tariff Structure.	113
3.4-4.	Evolution of Manufactured Imports.	114
3.4-5.	Distribution, Rates of Growth of Manufactured Imports by Sub-Aggregates.	114
3.4-6.	Imports: Sector Share, Growth Rates and Contribution.	115
3.4-7.	Imports Function.	116
3.4-8.	Imports Simultaneous Model.	117
3.4-9.	Evolution of Manufactured Exports.	123
3.4-10.	Manufactured Exports: Share, Rate of Growth by Sub-Aggregates.	123
3.4-11.	Exports: Sector Share, Growth Rates and Contribution.	124
3.4-12.	Determinants of the Dynamic of Manufactured Exports.	125
3.4-13.	Evolution of Industrial Productivity by Countries 1950-80.	125
3.4-14.	Export Falls by Sector.	126
3.4-15.	The Export Function.	127
A.3.4-1	Sources of Growth by Sectors.	139
A.3.4-2	Income Distribution. Gini Coefficient.	141
A.3.4-3	Results of the Unit Root Test.	142

4.2-1. Evolution of Profitability Indicators. 189
4.3-1. Relation Inflation Rates and Indexes. 191
4.3-2. Growth of Labour Productivity and Wages. 192
4.3-3. Wage Dynamics. 193
4.3-4. Profit Margin Evolution. 194
4.3-5. Price Function (Annual). 203
4.3-6. Price Equation (Quarterly). 204
4.3-7. Wage Function (Annual). 207
4.3-8. Wage Equation (Quarterly). 208
4.3-9. Prices and Wages Simultaneous Model. 209
A.4.3-1 Evolution of Profitability Indicators (Quantum Method). 222
A.4.3-2 Share of Aggregate Value and Material Costs in Production According to Components. 223
A.4.3-3 Share of Components of Aggregate Value Excluding Indirect Taxes. 223
A.4.3-4 Inflation Rates and Indexes of Prices and Costs. 224
A.4.3-5 Results of the Unit Root Tests. Price Equation. 225
A.4.3-6 Results of the Unit Root Tests. Wage Equation. 225

LIST OF VARIABLES

a: Technical coefficient of material inputs.
α: Wage resistance.
b: Labour productivity in terms of product per worker.
b*: Labour productivity at full capacity.
β: Labour productivity in terms of aggregate value per worker.
c: Units cost.
dddp: Domestic demand for domestic production.
E: Nominal exchange rate.
ϵ: Index of returns to labour.
δ: Foreign competitiveness index (chapter 3).
Share of manufactures in retail index (chapter 4).
f: Fixed costs-capital ratio.
ϕ: Financial conditions.
I: Investment.
I*: Notional investment demand.
k: Capital intensity.
K: Capital stock.
l: Technical coefficient of labour.
L: Labour.
L_o: Labour overheads.
λ_{cr}: Credit liquidity.
λ_p: Lag of prices behind costs.
m: Share of profits in income (aggregate value).
μ: Mark up.
my: Profit margin.
M: Manufactured imports.
p: Price.
π: Profit rate.
Π: Mass of profits.
q: Real output.
QC: Quantitative controls.
r: Raw materials unit price.
rp_d: Price relative to domestic prices.
rp_x: Price relative to foreign prices.
q*: Capacity output.
τ: Capital productivity.
u: Capacity utilization,
X: Manufactured exports.
ξ: Foreign exchange conditions.
ω: Nominal wage.
w: Real wage.
W: Labour earnings.
y: Real income.

1. INTRODUCTION

The two sections of this chapter provide background for the analysis of the crisis in industrial accumulation of following chapters. The first section provides the context in terms of the evolution of the Colombian economy and the manufacturing sector. The second introduces the structure of the analysis.

1.1. THE INDUSTRIAL CRISIS AND ITS CONTEXT

1.1.1. THE BACKGROUND

1.1.1.1. The evolution of the Colombian economy and the manufacturing sector.

In the postwar period the Colombian economy grew at an annual rate of 4.8%, accompanied by the usual structural change whereby the share of the agricultural sector in GDP vis-a-vis manufacturing and services decreased in the typical way (see Table 1.1-1). Fluctuations in this process have been largely determined by the demand and foreign exchange impact of an external cycle characterized by the dependence of import capacity on coffee prices. The cycle of the Colombian development has been largely determined by fluctuations in the external sector and subsequent policy responses. Thus, the evolution of the economic situation and accompanying phases in economic policy, providing the context for cycles of industrial growth, were greatly affected by movements in terms of trade [1/] (see Tables 1.1.-2 and 1.1.-3).

Three important phases are observed in Colombian industrial development (see Tables 1.1.-1 to 1.1.-4 and Charts 1.1.-1 to 1.1.-4):

1) 1900-1945: Pre-ISI (Import Substitution Industrialization) including an initial ISI process under protection provided by the

Great Depression and World War II [2]. 2) 1945-1974: ISI as an objective of import control with a more industrialist conception of development which shifted the emphasis to export promotion from 1967 onwards. 3) 1974-1987: Post-ISI including the critical period up to 1982 on which our analysis of the crisis of industrial accumulation focuses. We now focus on the phase of industrial growth stemming from the systematic pursuit of an ISI development strategy from 1945 to 1974. We consider the various subperiods in the context of fluctuations in the external sector and subsequent policy responses, and then briefly consider the Post-ISI period against this background.

During the 1945-1974 period of industrial expansion [3], industrial growth closely followed the external cycle: growth accelerated during the postwar coffee boom, declined during the external balance crisis from the middle fifties, and recovered from the late sixties [4] (see Table 1.1.-2 and Chart 1.1.-1). More precisely, we have three subperiods:

1) 1945-1957. A process of industrial modernization, with growth of manufacturing (at 8.4%) almost double that of aggregate GDP, accompanied the upswing in coffee prices. Extraordinary coffee revenues and reserves built up during the war provided foreign exchange and generated demand which bolstered the deepening of IS of consumer and intermediate goods. The ISI strategy emerged as import protection and the channelling of credit to and state direct investment in manufacturing. Meanwhile, the expansion of the internal market due to the rise in income and employment increased its primacy as a source of growth: for the period 1945-68 IS accounted for 23.6% of manufacturing growth, domestic demand (DD) for 74% and exports expansion (EX) for 2.4% (Berry & Thoumi. 1977).

2) 1957-1967. The importance of consumer durables and intermediate and capital goods in the process of ISI increased after 1957 stimulated by the tight balance of payments situation. Within the strong inflow of foreign capital of this period,

direct foreign investment was concentrated in the most dynamic ISI sectors [5]. The foreign exchange constraint resulting from the fall in coffee prices from 1955 onwards implied a reduction GDP growth which was more severe in the case of manufacturing. The consequent economic policy emphasized the IS strategy (which increasingly relied on import protection) [6], and a macroeconomic policy in which exchange and fiscal instruments played a more important role in the adjustment process. The aggravation of the "stop and go" nature of the policy by the end of the period was accompanied by a lower average and more volatile rate of growth.

3) 1967-1974. The shift to Export promotion was marked by a policy package including a crawling peg exchange rate as well as input importation, credit and other institutional facilities for minor exports. The policy adopted by the Lleras Government (1966-70) in order to face the critical balance of payments situation of the mid sixties included strict import controls, unification of the exchange rate and the adoption of a crawling peg system [7]. As a result of devaluation and exports incentives, and the boom of the world economy, manufactured exports grew considerably [8], accounting for 12.3% of manufacturing growth in 1968-74. Supported by an expanded import capacity GDP grew at an annual rate of 6.1% for this period [9], with the rate of growth of industrial production increasing substantially from the sixties to the begining of the seventies. However, this was accompanied by an acceleration of the inflation rate as a result of the substantial fiscal deficit financed by foreign credit accumulated by the Pastrana government (1970-74) and the inflation of the world economy (Table 1.1.-9 and Charts 1.1.-2 and 1.1.-3).

The 1974-1987 post-ISI period of stagnation included the two following subperiods:

1) 1974-1982. Both the rate of growth of GDP and of manufacturing fell (to 4.24% and 3.18%, respectively) during this period, while the structural transformation of the manufacturing sector in terms of a shift of industrial product from light

consumption (LC) to intermediate goods (IG), consumption durables (CD), and capital goods (KG) was brought to a halt. The neoliberal wave questioned the very concept of development strategy, weakening most elements of the industrial policy: the Andean pact and government direct investment [10]/ lost priority; the availability of credit on convenient terms was impaired by financial reform; import protection was reduced through import liberalization and cuts in tariffs; tax incentives lost importance vis-a-vis exchange rate devaluation as an export promotion device (Table A.1.2.). Priority given to short term problems became the hallmark of the economic policy of the Lopez government (1974-78) illustrated by two stabilization programs. Initially, financial reform was accompanied by fiscal adjustment including tax reform and strict controls on public expenditure (see Table 1.1.-4 and Chart 1.1.-3). Subsequently, when the sharp increases in coffee prices greatly increased foreign exchange earnings, an adjustment program reducing the rate of devaluation and tightening monetary and credit controls, was implemented to compensate for the monetary expansion implied by the boom. In turn, the Turbay government (1978-82) further liberalized imports, mainly as an anti-inflationary device to compensate for the impact of heavy public investment in infrastructure financed with foreign credit. On balance then, the period of the foreign exchange boom until the coffee price collapse in 1980 was a period of poor economic performance, even though the foreign exchange constraint was not binding. Economic policy failures compounded by the world crisis brought about the acute deterioration of the Colombian economy in the 1980-82 period which included the worst domestic financial crisis since the thirties [11]/.

2) 1982-1987. In response to the critical situation the Betancourt government (1982-86) concentrated on the financial and fiscal fronts through intervention in the financial system and tax reform. As for public expenditure and the external deficit, the initial focus of policy instruments on economic recovery was superseded by an

TABLE 1.1.1
SECTOR SHARE OF GDP

	1945-9	1950-4	1955-9	1960-4	1965-9	1970-4	1975-9	1980-4
AGRICULTURE\a	40.5%	33.6%	31.3%	28.9%	26.6%	23.9%	23.4%	22.5%
MINING	2.8	3.2	3.2	3.1	3.0	2.3	1.4	1.4
MANUFACTURING	14.8	17.4	19.4	20.6	21.1	22.5	22.9	21.4
CONSTRUCTION	3.4	2.8	3.4	2.9	3.2	3.6	3.3	3.6
SERVICES	32.4	35.7	35.8	37.2	38.9	40.4	41.2	43.4
GOVERMENT SERVICES	6.1	7.3	6.9	7.3	7.2	7.3	7.8	7.7

a\ Includes: cattle, fishing, hunting and silviculture
SOURCE: CEPAL'S national account. Banco de la Republica (1950-1970) and DANE (1970-1983). Ocampo (1988) and Author's Calculations.

TABLE 1.1.2
ECONOMIC CYCLE
(Rates of growth)

	1945/6-1954/5	1954/5-1966/7	1966/7-1973/4	1973/4-1981/82	1981/82-1984/89
INFLATION			10.65	24.24	22.02 1\
REAL EXPORTS	2.0	3.2	6.98	6.01	5.55
EXPORTS PURCHASING POWER	10.8	10.3	9.04	9.79	5.35
REAL IMPORTS	10.8	10.6	6.78	8.76	10.70
GROSS DOMESTIC PRODUCT	5.0	4.4	6.10	4.98	3.27
INDUSTRIAL OUTPUT	9.1	5.3	7.65	4.67	3.24

1\ period 1981-82 to 1986-87
Source: CEPAL's national accounts (1945-1970), Banco de la Republica (1950-1970) and DANE (1970-1985) Ocampo (1989) and Author's calculations.

TABLE 1.1.3
TERMS OF TRADE

YEAR	TERMS	YEAR	TERMS	YEAR	TERMS	YEAR	TERMS
1925	106.7	1941	59.5	1957	100.5	1973	85.2
1926	118.6	1942	61.3	1958	84.0	1974	82.1
1927	111.3	1943	52.0	1959	79.9	1975	68.0
1928	117.1	1944	85.1	1960	82.3	1976	93.6
1929	101.4	1945	53.8	1961	79.2	1977	146.0
1930	74.7	1946	64.4	1962	73.3	1978	125.2
1931	85.1	1947	71.6	1963	72.6	1979	104.1
1932	74.1	1948	70.8	1964	86.4	1980	100.0
1933	64.7	1949	80.6	1965	81.2	1981	84.8
1934	82.6	1950	108.9	1966	76.1	1982	86.6
1935	65.3	1951	94.9	1967	71.2	1983	93.1
1936	65.3	1952	100.7	1968	71.9	1984	98.6
1937	68.0	1953	105.4	1969	69.8	1985	90.3
1938	61.2	1954	122.7	1970	84.0	1986	116.3
1939	63.2	1955	106.7	1971	72.5	1987	89.6
1940	46.4	1956	102.4	1972	80.7	1988	89.1
						1989	85.7

SOURCE: Ocampo (1989).

TABLE 1.1.4.
MACROECONOMIC BALANCE

GDP Percentage	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
TOTAL INVESTMENT	20.23	19.42	18.13	18.27	21.46	16.99	17.56	18.75	18.28	18.15
TOTAL SAVING	16.33	13.29	16.18	18.28	18.86	17.07	19.03	21.60	20.44	19.77
EXTERNAL SAVING	3.90	6.13	1.95	-0.01	2.60	-0.07	-1.47	-2.85	-2.15	-1.62
BALANCE										
Private (S-I)	-2.97	-3.51	0.48	3.44	-2.18	0.24	0.21	4.30	1.77	2.55
Public (T-G)	-0.94	-2.62	-2.43	-3.42	-0.42	-0.17	1.26	-1.45	0.38	-0.93
External (M-X)	3.90	6.13	1.95	-0.01	2.60	-0.07	-1.47	-2.85	-2.15	-1.62

GDP Percentage	1980	1981	1982	1983	1984	1985	1986	1987	1988e
TOTAL INVESTMENT	19.07	20.62	20.49	19.89	18.96	19.04	18.00	20.10	21.80
TOTAL SAVING	19.58	16.91	15.08	14.67	15.50	17.06	22.10	21.10	22.30
EXTERNAL SAVING	-0.51	3.71	5.41	5.22	3.46	1.98	-4.10	-1.00	-0.50
BALANCE									
Private (S-I)	3.11	1.52	1.70	1.75	2.28	3.55	4.80	3.80	2.00
Public (T-G)	-2.59	-5.23	-7.11	-6.97	-5.74	-5.53	-0.70	-2.80	-1.50
External (M-X)	-0.51	3.71	5.41	5.22	3.46	1.98	-4.10	-1.00	-0.50

1/ External Saving is taken from Net Current Acount. DANE National Accounts.
SOURCE: Author's calculations based on Natonal Accounts. DANE

TABLE 1.1.5.
TEST FOR STRUCTURAL CHANGE OF TRENDS

	Total Production	Investment	Investment without 26-32	Investment without 26-32-34
F(2,26)	33.5	5.22	4.12	6.28
Growth rate		Average (%)		
1958-1973	7.08	7.56	7.30	7.20
1973-1985	4.06	2.22	3.13	2.08

SOURCE: Author's calculations based
on Annual Manufacturing Survey
and International Trade Year Book, DANE.

adjustment program to reduce the deficit [12]/ (see Table 1.1.-4 and Chart 1.1.-3). A slight recovery took place from 1983 onwards with the growth in manufacturing still falling short of the moderate GDP growth (see Chart 1.1.-2). Meanwhile, the recession left an acute unemployment problem, and external disequilibrium resulted in substantial foreign debt.

1.1.1.2. The context of the industrial crisis.

In order to consider the recent stagnation period in the context of the fluctuations of the external sector and the subsequent policy responses it is illuminating to relate it to the critical pre-1967 period. As before the policy response to the balance of payments situation strongly determined the implementation and effect of industrial policy in these two episodes. The critical situation of the middle sixties can not be understood in terms of an IS exhaustion independent of the worsening of the foreign exchange constraint, its effects on macropolicy, and the resulting volatility in rates of devaluation and inflation. Similarly, the neglect of the manufacturing sector evident in the shift away from industrial policy in the post-ISI 1974-87 period was reinforced by the stabilization efforts of this period. Moreover, in accordance with the neoliberal-monetarist policies in vogue, the conjunctural problems linked to new levels of inflation and the foreign exchange boom relegated the long term development problems to a subsidiary position [13]/.

Although the Colombian economy managed to avoid the serious macroeconomic disequilibrium and the accumulation of foreign debt typical of Latin America, GDP growth both decreased and became more unstable in the post-1974 period. The crisis of industrial growth took place in the course of an adjustment process of the Colombian economy which both preceded and followed the deep recession of the early eighties. External factors combining to impose this adjustment included the oil shocks and world crises of the seventies and early eighties, as well as the coffee and illegal export booms of the intermediate period. Among the

internal factors, various policy elements and the Dutch disease syndrome contributed to break the link between fluctuations in the external sector and the dynamism of capital accumulation in manufacturing. The structural change in the manufacturing sector considered in the next section took place in the context of the adjustment process of the entire colombian economy in the 1974-87 stagnation period. Indeed, the manufacturing sector bore the brunt of the adjustment, its position weakening vis-a-vis other sectors [14/].

1.1.2. THE STAGNATION OF MANUFACTURING: 1974-87

The downturn in the growth of manufacturing industry which took place constituted a structural breakdown in its dynamic pattern. We consider three aspects of the problem: first, a quantitative illustration of this process in terms of the evolution of manufacturing production (P) and investment in manufacturing (I) ; secondly, the deterioration of the trade balance; thirdly, the limited scope of post-1983 recovery.

1.1.2.1. The downturn.

After accelerating from 1958-67 to 1967-74, rates of growth of P and I (net of sectors 26, 32 and 34 [15/]) fell in 1974-82, and remained below their previous levels in 1982-87 (Table 1.1.-6 and Charts 1.1.-5, 1.1.-6). The following cyclical phases are observed: expansion from 1958 to 1962, contraction from 1963 to 1967, expansion again from 1968 to 1973, further contraction from 1974 to 1982, and finally stagnation from 1982 to 87 [16/]. The downturns in the last two phases were concentrated for P in 1974-75 and 1980-83, and for I in 1974-76 and 1982 and 1984. The fact that the crisis of 1974-75 initiated a period of stagnation for manufacturing [17/] is illustrated by the contrast between the trends of manufacturing production (P) and investment in manufacturing (I) before 1973 and after 1974 [18/]; the expansions of 1978-79 and 1986-87 failed to restore the previous

trend (Table 1.1.-6). Regarding the evolution of the productive structure, this stagnation implied the reversal of the tendency for manufacturing to increase its share in GDP. This shows how manufacturing lost its position as leading sector in economic development.

In the case of P the crisis was concentrated (see Table 1.1.-7) in the IG and KG sectors. Particularly severe falls took place in the rate of growth of the textiles sector in 1974-82, and textiles, transport equipment, and instruments and miscellaneous in 1978-82 [19]. As for I (see Table 1.1.-8) the crisis was concentrated in the KG and CD sectors, the most noticeable drops taking place for textiles and non-electric machinery in both 1974-82 and 1978-82 [20]. Therefore, the worst affected sectors are textiles and metalmechanic in which, as we will see, the increase in manufactured imports (M) and the fall in manufactured exports (X) were also concentrated.

1.1.2.2. The deterioration of the trade balance

Related to the stagnation of industrial accumulation is the expansion of M and the deterioration of X which manifested itself in the worsening of the deficit in the trade balance during the period 1974-82 (Table 1.1.-11). In this section we describe the acceleration in M and the deterioration of X, while section 3.4. analyses the relevant determinants and consequences. Section 4.4. considers the causes of the collapse in the growth of productivity which contributed to the decline in competitiveness apparent in the worsening of the deficit in the trade balance.

Increases in the rate of growth of M from 1967-74 and 1974-82 were concentrated in 1978-82, the greatest expansions in 1978 and 1980 (Table 1.1.-6.). At the subaggregate level, the rate of growth of M of KG shows the greatest increases [21]. Growth of X, as opposed to M, increased from 1958-67 to 1967-74 and decreased in 1974-82, falling most severely in 1974-75 and 1981-82 (Table 1.1-6). At the subaggregate level, the worst falls in

TABLE 1.1.c
INDUSTRIAL GROWTH
Thousand pesos (1970)

	INDUSTRY PRODUCTION		TOTAL INVESTMENT		INVESTMENT WITHOUT 26-32		INVESTMENT WITHOUT 26-32-34		IMPORTS		EXPORTS		TRADE DEFICIT	
YEAR	REAL AD-JUSTED 1/	GROWTH RATE (%)	REAL	GROWTH RATE (%)	REAL	GROWTH RATE (%)	REAL	GROWTH RATE (%)	REAL	GROWTH RATE (%)	REAL	GROWTH RATE (%)	REAL	GROWTH RATE (%)
1958	23687081		1334.9		1302.4		1177.7		9120.0		249.0		8952.7	
1959	26173941	10.50	1361.7	2.01	1334.7	2.48	1241.5	5.42	9355.7	2.58	265.1	6.48	9177.6	2.51
1960	29074254	11.08	1936.3	42.20	1914.5	43.44	1874.3	50.97	11549.1	23.45	251.4	-5.17	11380.2	24.00
1961	30953957	6.47	2097.1	8.30	2058.1	7.50	2047.0	9.21	11941.6	3.40	417.0	65.86	11524.6	1.27
1962	34656051	11.96	3033.0	44.63	1887.7	-8.28	1867.5	-8.77	12630.2	5.77	497.7	19.34	12132.5	5.28
1963	34854012	0.57	1932.6	-36.28	1898.5	0.58	1814.6	-2.83	10789.4	-14.57	593.5	19.26	10195.8	-15.96
1964	37758481	8.33	3098.6	60.33	2131.2	12.26	2005.0	10.49	12832.5	18.94	692.4	16.65	12140.1	19.07
1965	39906750	5.69	3354.9	8.27	2196.2	3.05	2127.6	6.12	9742.7	-24.08	1126.1	62.65	8616.6	-29.02
1966	42708305	7.02	3320.6	-1.02	2435.7	10.90	2321.5	9.11	12855.0	31.94	1072.2	-4.79	11782.8	36.74
1967	43383350	1.58	3434.7	3.44	2865.0	17.63	2798.7	20.56	9490.8	-26.17	1031.1	-3.83	8459.7	-28.20
1968	48504343	11.80	2209.3	-35.68	2137.0	-25.41	2040.5	-27.09	11061.8	16.55	1683.3	63.25	9378.5	10.86
1969	51720417	6.63	2880.8	30.39	2814.1	31.68	2698.8	32.26	11549.0	4.40	1956.4	16.22	9592.7	2.28
1970	56181688	8.63	3642.9	26.46	3228.2	14.72	2790.9	3.41	14010.5	21.31	2058.2	5.21	11952.3	24.60
1971	62568525	11.37	3785.2	3.91	2947.9	-8.68	2808.3	0.62	14966.6	6.82	2337.9	13.59	12628.7	5.66
1972	67229096	7.45	5240.3	38.44	4609.7	56.37	4304.7	53.29	14000.0	-6.46	3643.4	55.84	10356.6	-17.99
1973	74405263	10.67	5396.7	2.98	5065.9	9.90	4875.4	13.26	15559.7	11.14	5199.2	42.70	10360.5	0.04
1974	77568834	4.25	4176.4	-22.61	3855.9	-23.89	3640.9	-25.32	17283.4	11.08	5026.1	-3.33	12257.2	18.31
1975	76761018	-1.04	4393.0	5.18	3701.5	-4.00	3442.0	-5.46	15612.7	-9.67	4701.2	-6.46	10911.4	-10.98
1976	84015968	9.45	4270.6	-2.79	3429.6	-7.35	3387.0	-1.60	17326.7	10.98	5627.8	19.71	11699.0	7.22
1977	89953406	7.07	4918.5	15.17	3820.8	11.41	3696.1	9.12	18062.7	4.25	5734.3	1.89	12328.4	5.38
1978	99176613	10.25	5406.4	9.92	4592.3	20.19	4436.3	20.03	22625.7	25.26	5887.5	2.67	16738.2	35.77
1979	107273538	8.16	5392.4	-0.26	4701.3	2.37	4568.9	2.99	23778.8	5.10	6286.6	6.78	17492.2	4.50
1980	107687382	0.39	5302.3	-1.67	5022.5	6.83	4814.9	5.38	28645.8	20.47	6926.4	10.18	21719.4	24.17
1981	104617536	-2.85	6052.7	14.15	5882.5	17.12	5617.0	16.66	30807.9	7.55	6720.9	-2.97	24087.0	10.90
1982	105420727	0.77	7665.1	26.64	7424.5	26.21	5126.6	-8.73	32964.8	6.68	6480.8	-3.57	26384.0	9.54
1983	105489683	0.07	7644.3	-0.27	6865.7	-7.53	5711.1	11.40	29927.2	-8.94	5226.8	-19.35	24700.5	-6.38
1984	115660094	9.64	5247.0	-31.36	4964.0	-27.70	4398.8	-22.98	28549.5	-4.60	5103.2	-2.36	23446.2	-5.08
1985	118856118	2.76	4886.4	-6.87	4606.8	-7.20	3834.6	-12.83	25660.9	-10.12	6409.7	25.60	19251.1	-17.89
1986	129282906	8.77	5348.0	9.45	5121.0	11.16	4465.4	16.45	28219.1	9.97	7623.0	18.93	20596.1	6.99
1987	137067681	6.02	6430.7	20.24	6311.0	23.24	5796.7	29.81	30032.5	6.43	8508.7	11.62	21523.8	4.50

SUBPERIODS

Period	Production	Total Investment	Investment without 26-32	Investment without 26-32-34	Imports	Exports	Trade deficit
1958-1967	6.70	11.04	7.33	7.71	1.09	19.25	-0.10
1967-1974	8.45	9.13	9.27	9.05	7.79	22.29	4.02
1974-1982	4.71	6.53	8.30	6.26	9.82	4.33	11.72
1982-1987 2/	4.67	2.97	3.03	2.19	-0.10	5.14	-1.39

1/ Excluding firms with less than 20 workers
2/ Simple average.
SOURCE: Author's calculations.

TABLE 1.1.7

GROWTH AND COMPOSITION OF PRODUCTION
(Percentages)

Aggregate		Subaggregates						Sectors					
SUBPERIOD	g		s		g		sg		s		g		c
								20	29.49	36	24.41	31	21.14
								23	15.69	38	15.89	23	14.26
		LC	38.90	LC	6.88	LC	267.63	31	13.42	27	14.39	20	12.93
1967	9.34	CD	5.72	CD	10.52	CD	60.17	21	8.07	31	13.54	27	7.82
1974		IG	43.92	IG	11.31	IG	496.74	22	1.94	37	5.27	22	1.49
		KG	11.52	KG	10.95	KG	126.14	36	1.34	22	4.52	34	0.58
								29	0.75	29	4.18	29	0.32
								25	0.59	34	2.53	25	0.38
								20	29.49	37	10.72	31	32.20
								31	15.69	31	7.79	21	19.63
		LC	0.37	LC	4.32	LC	1.59	23	13.42	39	7.79	20	12.12
1974	4.20	CD	0.07	CD	5.72	CD	0.38	21	8.07	21	7.73	24	11.53
1982		IG	0.43	IG	3.68	IG	1.60	36	1.94	25	2.11	25	0.94
		KG	0.13	KG	4.90	KG	0.64	22	1.34	20	1.87	36	7.00
								29	0.75	22	-0.88	22	-1.79
								25	0.59	23	-3.38	23	-19.06
								31	19.04	35	20.87	31	68.66
								20	17.73	39	17.04	21	41.16
		LC	36.53	LC	3.09	LC	112.88	23	10.77	37	11.25	37	13.48
1978	0.02	CD	0.71	CD	-0.22	CD	-0.16	21	9.80	31	10.61	24	13.33
1982		IG	43.06	IG	0.85	IG	36.60	36	1.56	29	0.40	35	-1.75
		KG	13.36	KG	-0.34	KG	-4.54	22	1.24	30	0.27	39	-1.80
								29	0.68	22	0.20	38	-6.02
								25	0.52	23	-8.15	23	-72.54

g: Growth rate for the subperiod.
s: Share: subaggregate (or sector) production over total production.
sg: Weighted rate of growth: share x growth rate.
c: Contibution: ratio between the increase of the variable for each sector and the increase for the manufact

Abbreviatons:
LC: Light consumption.
CD: Durable consumption.
IG: Intermediate goods.
KG: Capital goods.

Source: Author's calculations.

TABLE 1.1.8

GROWTH AND COMPOSITION OF INVESTMENT

Aggregates		Subaggregates						Sectors					
Subperiod	g		s	g	sg			s	g	c			
								23	15.66	22	35.03	23	53.38
								20	14.68	24	24.46	33	28.72
		LC	30.45	LC	3.85	LC	1.11	31	12.26	38	23.53	34	19.15
1967	9.76	CD	6.81	CD	13.16	CD	0.90	21	7.19	23	17.58	38	19.12
1974		IG	48.04	IG	11.90	IG	5.72	37	1.87	31	8.22	25	-0.51
		KG	14.71	KG	14.59	KG	2.15	25	1.66	27	7.82	27	-5.66
								22	0.82	21	2.43	20	-18.74
								29	0.58	20	-1.72	31	-41.82
								20	17.93	27	74.70	34	60.18
								23	14.50	34	21.50	20	15.39
		LC	32.03	LC	8.49	LC	2.72	31	11.89	25	20.71	28	5.19
1974	8.39	CD	8.63	CD	7.14	CD	0.62	21	7.19	21	13.91	21	4.10
1982		IG	43.79	IG	9.32	IG	4.08	30	1.59	36	1.97	35	-0.38
		KG	16.15	KG	5.00	KG	0.81	25	0.86	23	1.42	36	-0.65
								22	0.70	29	1.09	30	-1.55
								29	0.65	30	-4.24	23	-3.69
								20	17.57	34	173.35	34	7.40
								23	13.46	25	104.43	28	8.02
		LC	32.77	LC	68.30	LC	2.24	31	11.20	22	73.29	31	7.73
1978	13.17	CD	9.22	CD	11.96	CD	1.10	34	9.34	28	49.47	20	5.45
1982		IG	43.91	IG	23.42	IG	10.28	30	1.21	35	3.55	29	-0.36
		KG	15.18	KG	1.75	KG	0.27	25	1.13	33	-1.39	36	-1.09
								22	0.75	30	-6.23	21	-2.42
								29	0.59	36	-6.81	23	-6.16

g: Growth rate for the subperiod.
s: Share: subaggregate (or sector) production over total production.
sg: Weighted rate of growth: share x growth rate.
c: Contibution: ratio between the increase of the variable for each sector and the increase for the manufacturing aggregate

Abbreviatons:
LC: Light consumption.
CD: Durable consumption.
IG: Intermediate goods.
KG: Capital goods.

Source: Author's calculations.

CHART 1.1.1.

GDP – INDUSTRIAL OUTPUT

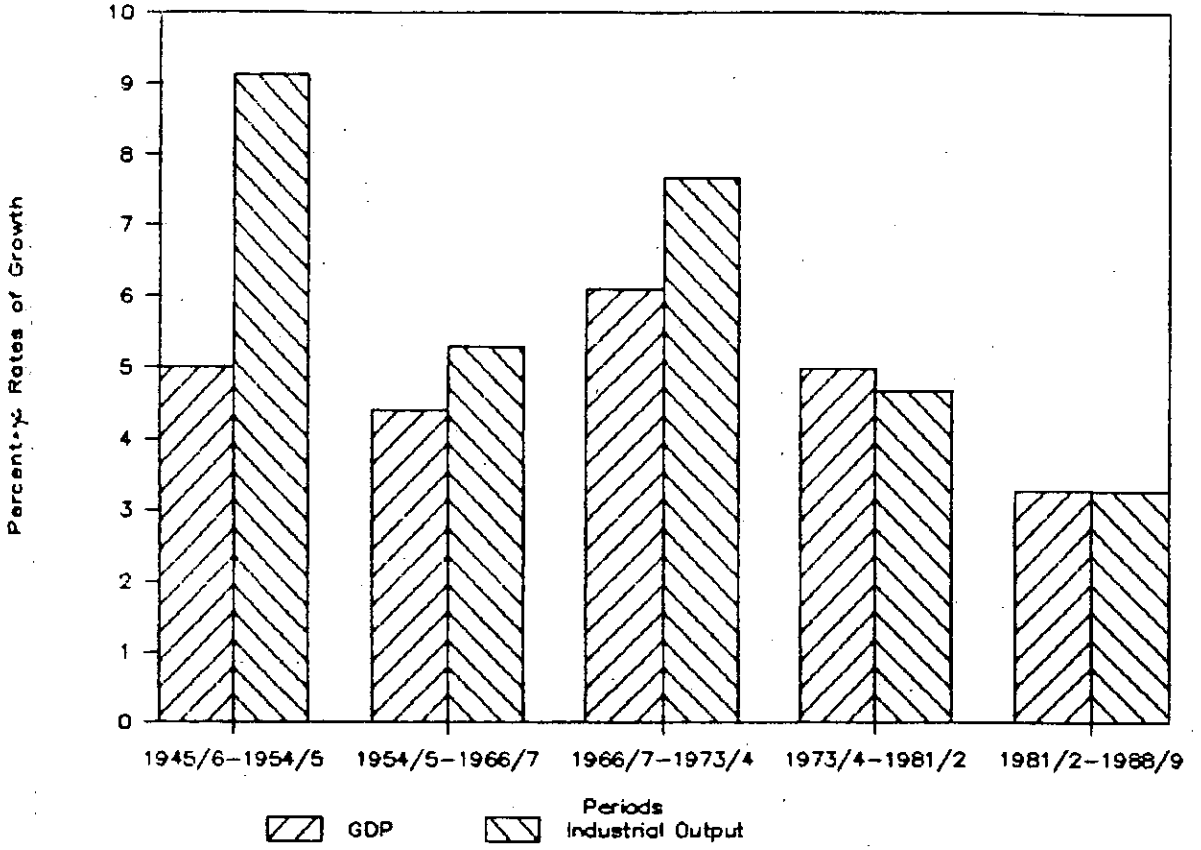


CHART 1.1.2.

GROWTH AND INFLATION

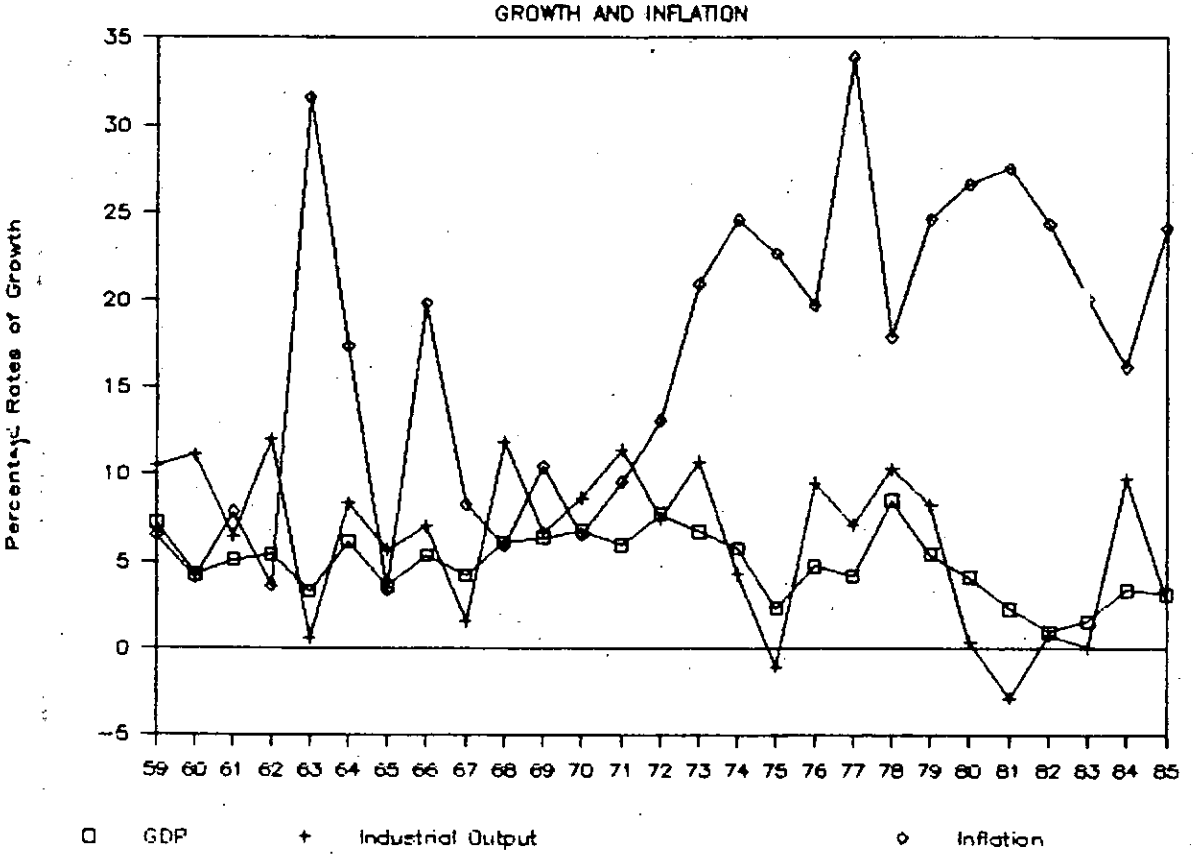


CHART 1.1.3.

AGGREGATE PUBLIC AND EXTERNAL BALANCE

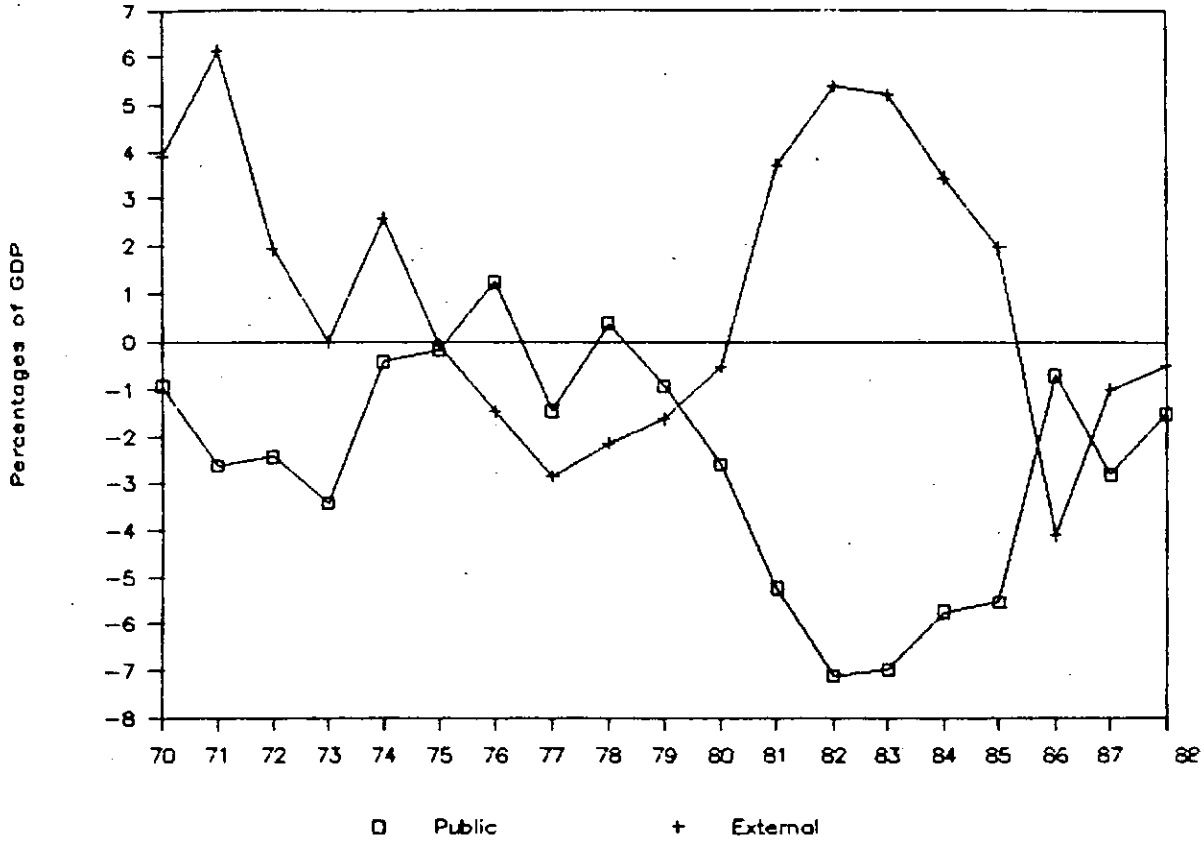


CHART 1.1.4.

INDUSTRIAL TRADE DEFICIT

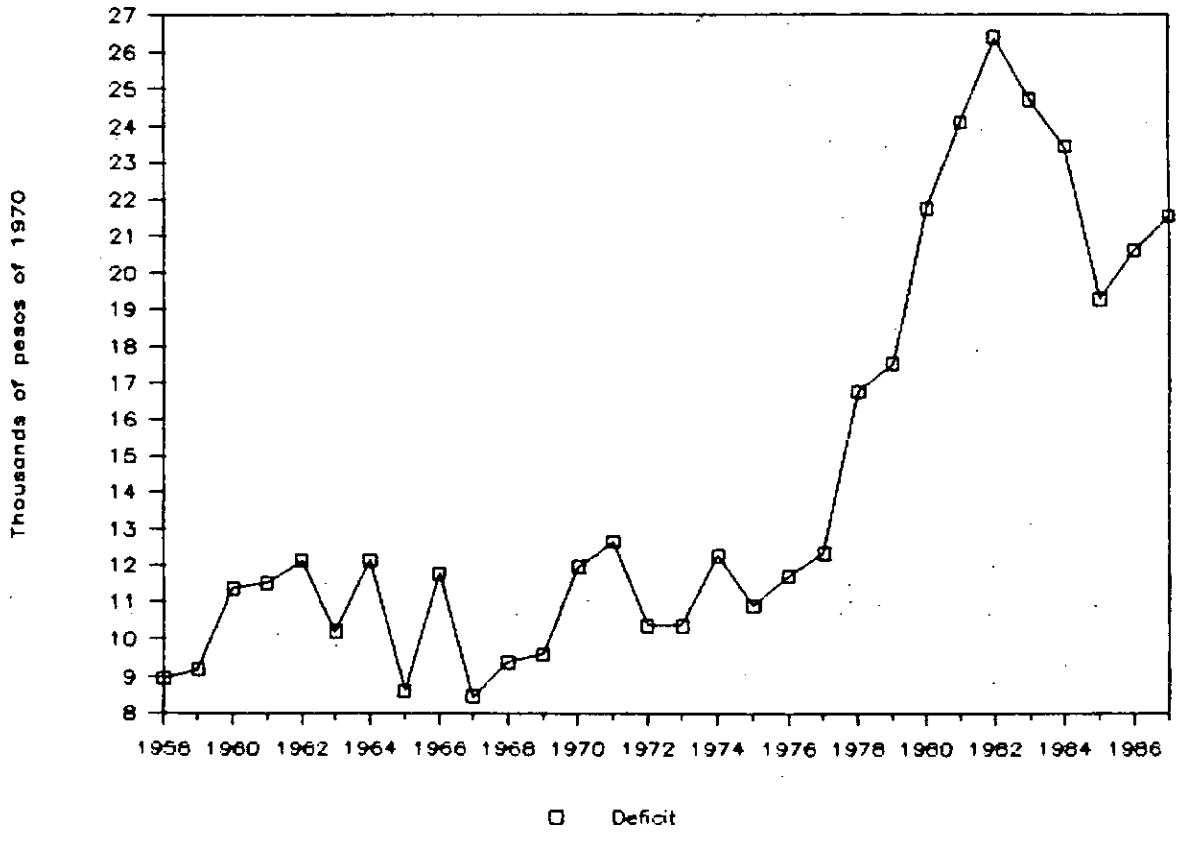


CHART 1.1.5.

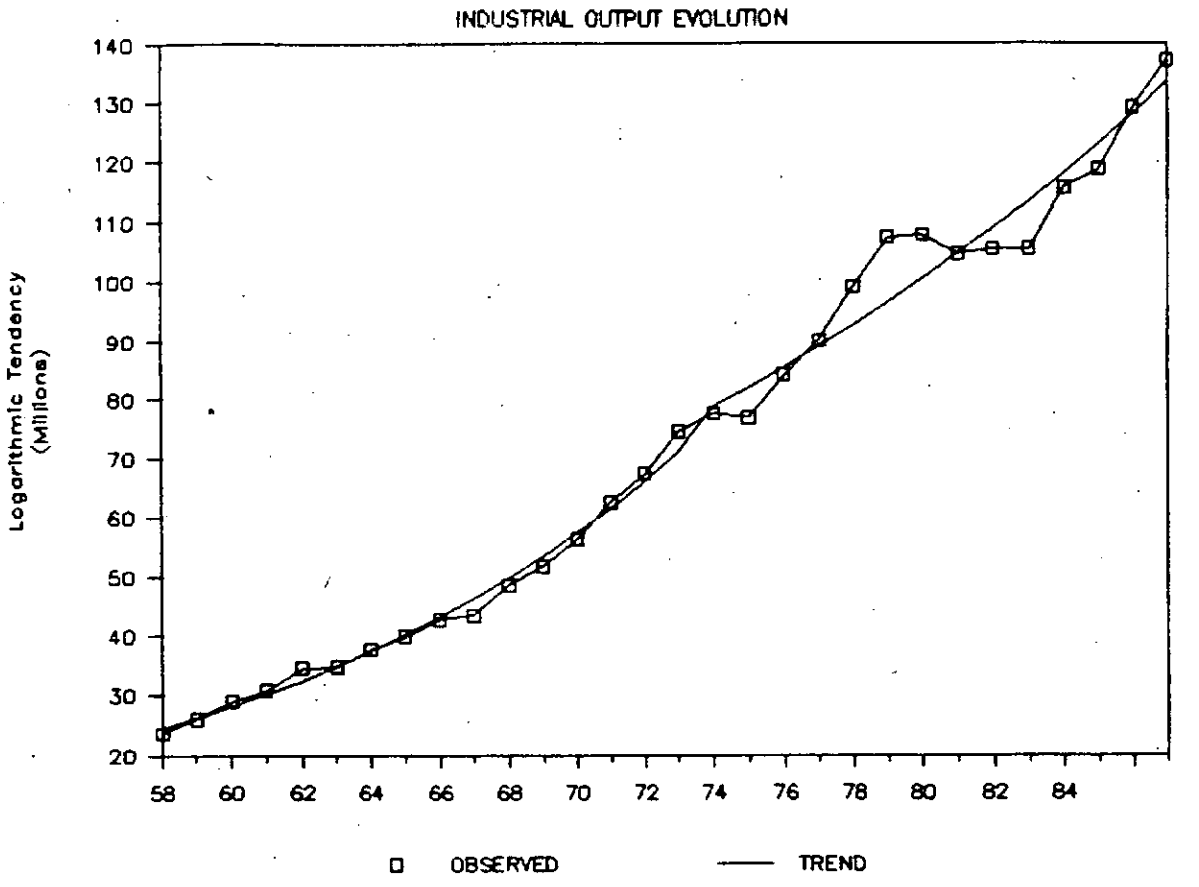
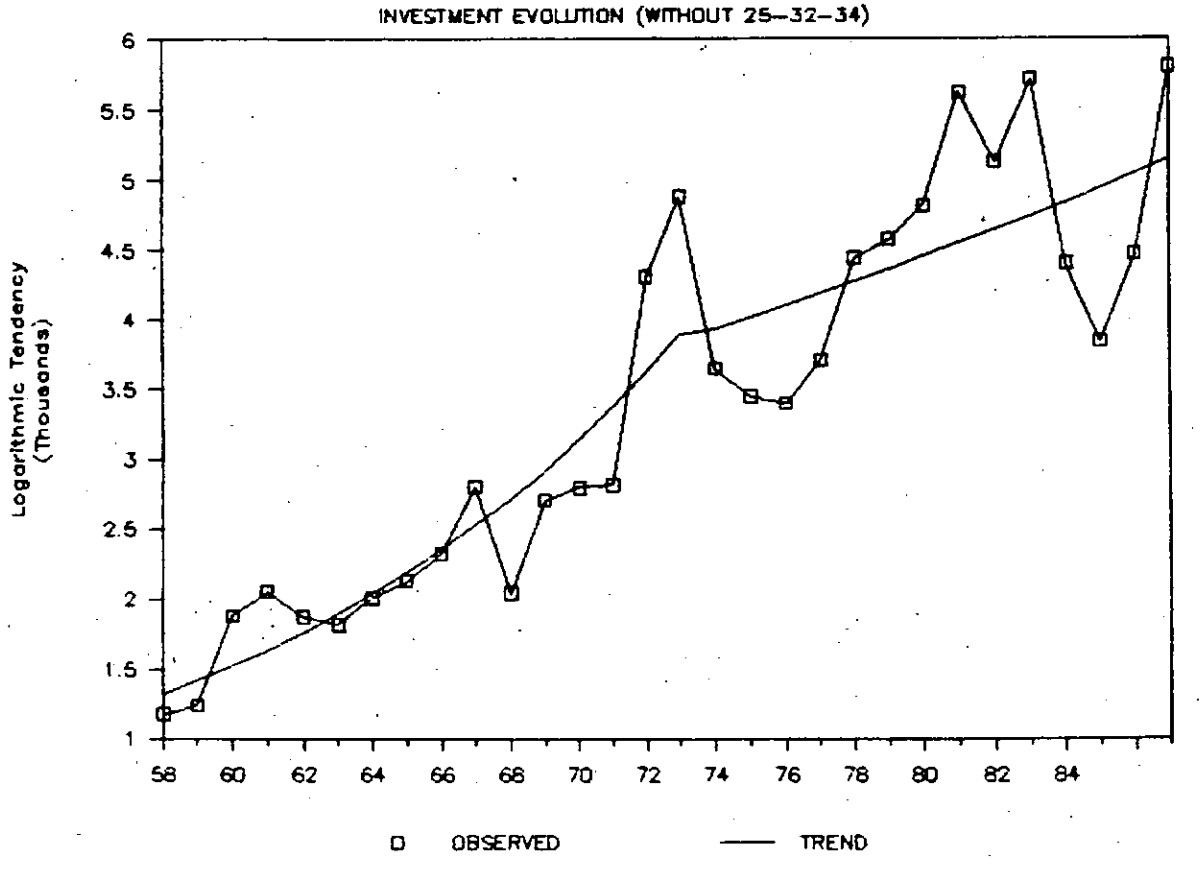


CHART 1.1.6.



the growth of X were concentrated in IG [22].

1.1.2.3. Recovery from 1983 onwards?

The limitations of the recovery enjoyed by the sector from 1983 onwards confirm the stagnant character of the post 1974 period. The bottom of the recession was reached by the second quarter of 1983. After that Colombian manufacturing enjoyed a recovery that weakened in 1985 and was exhausted by 1988 (Table 3.2-1). A comparison with the previous period (1974-82) underlines the contribution of IS as a source of growth of demand, although DD contributed particularly for LC [23], and EX for IG [24]. Similarly, the expansion manifested itself in the relative financial recovery of firms (Fedesarrollo 1987), and in an increase in investment activity (Table 1.1-11). However recovery was limited in that the rate of growth of P did not increase for the period 1982-87, the rate of growth of I fell (as a result of its negative level from 1983 to 85), and by 1988 the rate of growth of P decreased again [25].

1.2. THE STRUCTURE OF THE ANALYSIS

This section completes the introduction to the analysis of the following chapters by providing an overview of the analytical and methodological framework which underlies it.

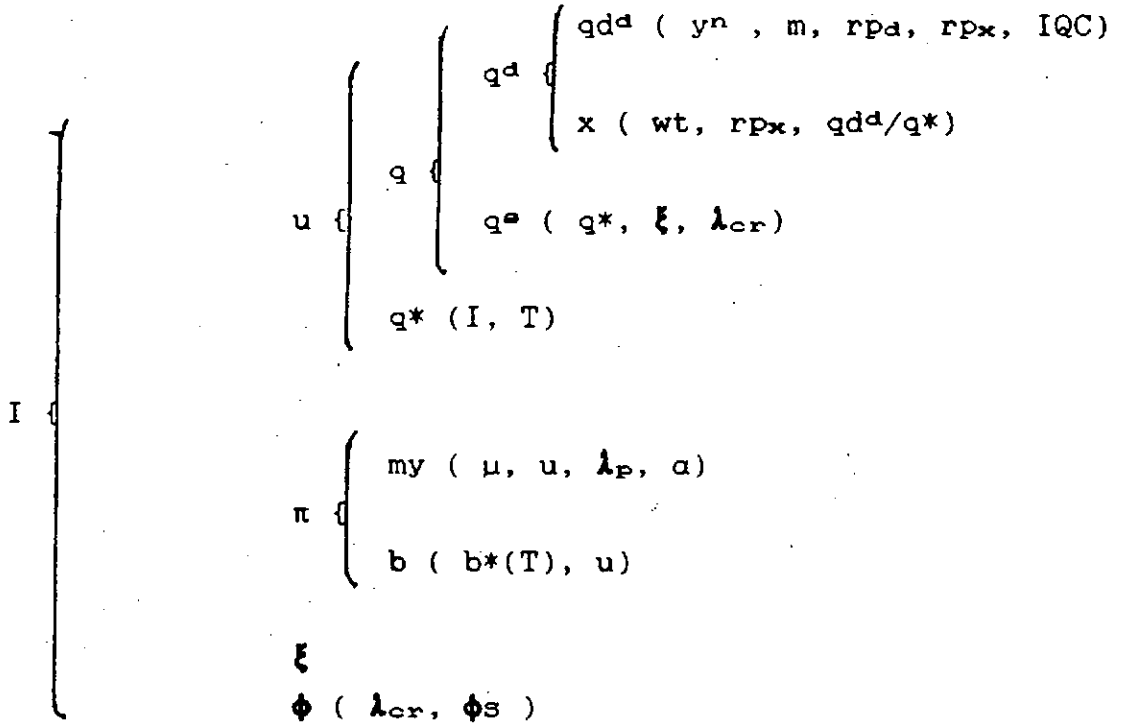
1.2.1. THE ANALYTICAL FRAMEWORK

We now present the general analytical structure in which the various theoretical elements underlying the analyses of the following chapters are incorporated. In the course of these analyses we follow the "piecemeal" strategy of approaching the different aspects of the crisis of industrial growth by means of a sequence of models whose properties illuminate each specific

aspect. Since the formulation of a complete model encompassing all these elements is beyond the scope of this work, we substitute for this formulation by sketching the basic structure and concepts which underlie it.

1.2.1.1. The structure of the model.

The following diagram summarizes the global structure of the argument:



Investment (I) is determined by capacity utilization (u), profitability (π), foreign exchange conditions (ξ), and financial conditions (φ), including credit liquidity (λ_{cr}), and the financial (assets-liabilities) structure (φs).

u is defined as the ratio of output (q) to capacity output (q^*), the latter determined by I and technological conditions (T). Although normally q is demand constrained (i.e. $q=q^d$), occasionally supply factors, including q^*, ξ, and φ become the determinant factors (whence $q=q^e$). q^d is determined by domestic demand for domestic production (qd^d), and exports (x). The

factors affecting qd^d are of two types: those which affect the level of domestic demand, i.e. the level of income y_d, the share of profits in income (m), and domestic relative prices rp_d; and those which determine the allocation of domestic demand between domestic supply and imports, i.e. domestic prices relative to foreign prices (rp_x), and the level of import controls (IQC). x is a function of the level of world trade (wt), price competitiveness (given by rp_x), and domestic excess supply (measured by qd^d/q^*).

π is determined by the profit margin (my) and productivity (b). my is a function of the mark-up (μ), u, the length of the lag of prices behind costs (λ_p), and wage resistance (α). b is determined by u, and productivity at full capacity (b^*), itself a function of T.

1.2.1.2. The conceptual framework.

A fixed-price elastic-supply conceptualization of the manufacturing sector underlies our analytical structure. The flexible accelerator and profits liquidity model of investment assumes the prevalence of demand as the key constraint on which the analysis of the determination of output and profitability are based. In particular, the determination of the profit margin by an exogenously given μ, as well as by u, λ_p, and α, assumes an imperfect competition theory of price and wage formation of a post-Keynesian type. However, supply factors are also important, particularly in the sphere of profitability. To the crucial role of μ in the determination of my, the influence of λ_p and α, as well as that of T on b via b^*, is added. Similarly, although the demand regime determination of q is the norm, output becomes supply determined when foreign exchange (ξ) or liquidity (λ_{cr}) replace demand as the binding constraint.

The cost of the analytical expedient of breaking down elements which work in an integrated way must be offset now by stressing

the interrelationships between supply-profitability and demand conditions. In particular, supply-profitability conditions such as μ and α affect demand conditions through their effect upon qd^d (via m and rp_x) and on x (via rp_x). Conversely, demand conditions affect supply-profitability conditions such as b (via u). Less abstract instances of the integrated working of analytically broken-down processes are the role of relative prices and the Dutch disease syndrome. Examples of demand-cum-supply-profitability aspects of processes related to rp_d and rp_x are: the erosion in manufacturing profitability vis-a-vis agriculture resulting from movements in terms of trade favourable to the latter, which additionally generate a wage reaction to the increases in food prices; the erosion of μ which firms have to accept in the face of a decline in competitiveness brought about by the combination of wages growing ahead of productivity and the nominal exchange rate. These are aspects of a Dutch disease process whose demand and supply-profitability components will be dealt with separately.

1.2.2. THE METHODOLOGICAL FRAMEWORK

This introductory chapter will be followed by three chapters. The second concentrates on investment and its finance, and the third and fourth focus on the conditions of demand and profitability of industrial accumulation, respectively. Each chapter starts with a presentation of the theoretical elements involved in the analysis of each problem. The empirical sections which follow proceed in two stages: first, a description of the developments in the economic situation concerning those aspects of each problem, including an illustration of the short-term movements of the variables involved; secondly, an econometric investigation of the structural relationships between the variables postulated in the conceptual framework. In this way, the empirical analysis combines the consideration of the short-term mechanisms involved in those processes with the analysis of the structures within which these mechanisms operate.

Two characteristics of the econometric analysis must be mentioned at this point. First, in various instances the specified equation is a reduced form of a supply-demand system. In accordance with the demand constraint assumption this will be normally a demand function with an additional supply argument. Second, the dynamic specification problem created by the (time series) nature of the information used will be dealt with either by traditional methods (i.e. introducing lagged variables and using autocorrelation correction methods) or by Cointegration (CI) methodology. This solution of the dynamic specification and the spurious regression problems, as well as its integration of a ECM (Error Correction Mechanism) in the two stages Engle-Granger procedure (EG2S), is introduced in Appendix A-1.3. Concepts used in the course of the analysis, such as the cointegration regression (CR), and some tests for unit roots (DF for Dickey-Fuller, ADF for the augmented DF, and SB for Sargan-Barghava) are also briefly introduced in this Appendix.

Finally some points of presentation. First, the survey of the literature and illustration of the mechanisms at work in the initial section of each chapter is more detailed than what is strictly required by the empirical analysis. These sections are designed to provide an integrated presentation of diverse concepts and models sharing the view of a fixed-price demand determined level of output manufacturing sector and its macroeconomic role. Section 4.1. elaborates at some length on the foundations of this view. Second, while the analysis of chapters 2 and 4 is carried out for total manufacturing, that of chapter 3 on demand conditions considers two levels of disaggregation: on one hand, light consumption (LC), durables (CD), intermediates (IG), and capital goods (KG); on the other hand the 20 sectors of the ISIC-1968 (See Appendix A.1-2). Third, the following notation is used throughout:

$\hat{x}$: proportionate rate of growth of x

y_x: partial derivative, i.e. $\delta y/\delta x$ with say $y=f(x,z)$

lx: natural logarithm of x

APPENDIX

A.1-1 TABLES

TABLE A.1.1.
INTERNATIONAL TRADE

	1945-9	1950-4\2	1955-9	1960-4	1965-9	1970-4	1975-9	1980-4
A: COEFFICIENTS\1								
Export/GDP	21.6%	19.0%	17.8%	16.5%	15.8%	14.9%	15.1%	14.2%
Import/GDP	16.7	21.4	18.4	16.3	15.5	16.8	16.0	19.1
B: EXPORT COMPOSITION\3								
Coffee	72.1%	78.7%	76.2%	68.9%	61.0%	50.5%	57.9%	48.7%
Gold	5.6	2.7	2.5	2.8	1.7	1.8	2.7	6.4
Oil and fuel-oil	14.6	13.6	14.3	16.1	13.5	1.9	3.9	6.6
Minor and primary	7.7	5	7	[9.1	15.0	19.8	16.6	19.0
Manufactures\4				[3.1	8.7	21.0	18.8	19.3
C: IMPORT COMPOSITION								
Consumption goods		14.6%	9.4%	7.3%	7.9%	9.9%	13.2%	11.9%
Intermediate goods		44.4	50.2	45.2	48.8	51.1	46.4	40.0
Fuel		4.3	3.2	1.9	0.5	0.4	5.6	12.3
Capital goods		36.5	36.6	44.0	41.9	38.4	34.7	35.9
Others		0.2	0.6	1.6	1.7	0.2	0.1	

1\ Goods and services. 1975 prices.
2\ Imports composition excludes 1951.
3\ Goods and gold.
4\ SITC groups 5 to 8.

SOURCE: A:See table 1.1.1
B & C:International Trade Year Book and Banco de la Republica Journal.
Ocampo.(1988)

TABLE A.1.2
TRADE POLICY

YEAR	Coffee export tax 1/	Subsidy of non traditional exports	Average tariff according to receipts	Proportion of imports approved under previous license regime	Proportion of rejected licenses	Previous deposits to imports as % of imports
1945-9	0.0	0.4 /2	11.1			
1950-4	7.1	32.5	18.3	21.0%		0.48
1955-9	12.2	19.2	12.0	29.5		16.2
1960-4	24.7	29.3	14.2	50.4 /3	15.5%	21.2
1965-9	33.3	28.8	16.0	78.1	32.3	24.9
1970-4	32.2	28.9	14.3	70.0	8.8	13.7
1975-9	44.9	14.1	13.5	57.8 /4	1.1	5.7
1980-4	33.1	18.9	15.0	55.9	10.4	6.4
1985-7	41.2		16.7	65.4	25.7	10.2

1/ Add valorem tax, differential exchange rate and retention quota.
2/ 1948-49
3/ 1959-63
4/ 1979
SOURCE: Ocampo (1989c). Using the exchange rate of each year.

TABLE A.1.3.
INDUSTRIAL STRUCTURE: SECTORS SHARE OF VALUE ADDED.

	1945	1953	1958	1967	1974	1979	1983
CONSUMPTION GOODS	61.7	57.9	50.9	44.9	37.7	40.9	47.5
INTERMEDIATE GOODS	35.1	37.1	41.1	43.6	49.1	45.2	40.3
CAPITAL AND DURABLE GOODS	3.2	5.0	8	11.5	13.2	13.9	12.2

SOURCE: INDUSTRIAL CENSUS AND ANNUAL MANUFACTURING SURVEY
TAKEN FROM OCAMPO (1988)

TABLE A.1.4.
GDP GROWTH AND COMPOSITION

	GDP RATES OF GROWTH									GDP SECTOR SHARE								
	AGRI-CULTURE	MINING	INDUS-TRY	CONS-TRUCTION	GOVER-MENT	SERVICES & OTHERS	URBAN	RURAL	TOTAL	AGRI-CULTURE	MINING	INDUS-TRY	CONS-TRUCTION	GOVER-MENT	SERVICES & OTHERS	URBAN	RURAL
										1958	31.28	3.12	19.31	3.06	11.85	30.69	34.40	65.60
1959	4.92	16.06	8.32	11.30	2.09	9.69	5.93	7.90	7.23	1959	30.61	3.38	19.50	3.17	11.28	31.40	33.99	66.01
1960	0.13	3.69	6.17	-6.12	6.43	8.29	0.49	6.21	4.27	1960	29.40	3.36	19.86	2.86	11.51	32.61	32.76	67.24
1961	4.23	-6.49	5.98	13.58	5.18	5.68	3.13	6.04	5.09	1961	29.16	2.99	20.05	3.09	11.52	32.79	32.14	67.86
1962	3.39	-0.42	6.87	7.03	5.07	7.04	3.04	6.54	5.41	1962	28.60	2.82	20.31	3.14	11.49	33.30	31.42	68.58
1963	0.49	12.53	4.75	-9.15	6.99	4.59	1.58	4.07	3.29	1963	27.82	3.08	20.59	2.76	11.90	33.72	30.90	69.10
1964	5.66	8.10	5.91	0.14	3.60	8.09	5.90	6.29	6.17	1964	27.69	3.13	20.54	2.60	11.61	34.33	30.82	69.18
1965	0.04	7.50	4.69	2.37	5.53	5.31	0.80	4.85	3.60	1965	26.74	3.25	20.76	2.57	11.83	34.90	29.99	70.01
1966	3.37	-3.81	6.65	17.65	4.20	6.42	2.59	6.54	5.35	1966	26.24	2.97	21.01	2.67	11.70	35.25	29.20	70.80
1967	5.17	1.29	3.59	20.77	3.25	2.59	4.77	3.97	4.20	1967	26.48	2.86	20.89	3.33	11.59	34.71	29.36	70.64
1968	6.86	-3.41	6.18	10.21	4.17	6.39	5.85	6.23	6.12	1968	26.66	2.63	20.90	3.46	11.30	34.80	29.29	70.71
1969	4.72	18.05	7.30	9.57	5.38	6.27	5.92	6.55	6.37	1969	26.25	2.91	21.08	3.56	11.27	34.76	29.16	70.84
1970	3.01	-2.40	8.31	3.83	8.30	9.86	2.47	8.50	6.74	1970	25.33	2.66	21.39	3.46	11.44	35.71	28.00	72.00
1971	0.82	-2.06	8.53	3.38	11.52	7.14	0.54	8.07	5.96	1971	24.10	2.46	21.91	3.38	12.04	36.11	26.56	73.44
1972	7.82	8.30	10.72	5.97	8.72	5.49	7.86	7.60	7.67	1972	24.13	2.48	22.53	3.32	12.15	36.38	26.61	73.39
1973	2.36	4.56	8.53	19.73	6.59	7.52	2.57	8.23	6.72	1973	23.15	2.43	22.91	3.73	12.14	35.64	25.58	74.42
1974	5.55	-26.46	8.33	7.58	3.94	6.83	2.51	6.86	5.75	1974	23.11	1.69	23.47	3.79	11.93	36.01	24.79	75.21
1975	5.78	3.83	1.24	-9.90	2.54	1.96	5.65	1.23	2.32	1975	23.89	1.71	23.22	3.54	11.96	35.88	25.60	74.40
1976	3.05	-2.06	4.38	9.00	7.34	5.12	2.71	5.42	4.73	1976	23.50	1.60	23.15	3.48	12.25	36.01	25.11	74.89
1977	3.27	-12.40	1.44	7.62	6.85	5.98	2.28	4.79	4.16	1977	23.30	1.35	22.54	3.59	12.57	36.64	24.65	75.35
1978	8.12	-6.51	9.97	-2.56	6.08	10.22	7.32	8.85	8.47	1978	23.23	1.16	22.86	3.23	12.29	37.24	24.39	75.61
1979	4.84	1.17	6.12	-0.57	5.82	5.76	4.67	5.61	5.38	1979	23.11	1.11	23.02	3.05	12.34	37.37	24.22	75.78
1980	2.21	18.44	1.21	14.62	6.89	4.81	2.96	4.45	4.09	1980	22.69	1.27	22.38	3.35	12.60	37.63	23.96	76.04
1981	3.20	5.39	-2.65	7.10	4.81	3.26	3.32	1.95	2.28	1981	22.90	1.31	21.30	3.51	12.99	37.99	24.20	75.80
1982	-1.89	1.75	-1.44	4.05	2.46	3.17	-1.70	1.79	0.95	1982	22.25	1.32	20.80	3.62	13.19	38.83	23.57	76.43
1983	2.81	14.18	1.14	12.95	-0.36	0.27	3.44	1.00	1.57	1983	22.52	1.48	20.71	4.02	12.93	38.33	24.00	76.00
1984	1.75	21.97	5.99	6.37	5.81	1.00	3.00	3.46	3.35	1984	22.18	1.75	21.24	4.14	13.24	37.45	23.92	76.08
1985	1.65	38.02	2.35	8.62	2.84	1.82	4.30	2.73	3.11	1985	21.86	2.34	21.21	4.36	13.21	37.02	24.20	75.80
1986	3.38	62.14	5.95	4.87	5.29	-0.65	9.05	2.55	4.12	1986	21.71	3.64	21.58	4.40	13.35	35.33	25.34	74.66
1987	6.38	24.09	6.22	-10.04	6.41	8.70	8.93	6.47	7.09	1987	21.56	4.22	21.40	3.69	13.27	35.86	25.78	74.22
1988	2.59	2.65	2.19	8.59	5.66	4.18	2.60	4.09	3.71	1988	21.33	4.17	21.09	3.87	13.52	36.02	25.50	74.50
1989	4.90	10.70	2.30	1.30	3.64	2.01	5.85	2.35	3.24	1989	21.87	4.47	20.90	3.79	13.57	35.59	26.15	73.85
1990	3.01	4.81	4.27	0.90	0.00	43.24	3.52	3.71	3.61	1990	21.55	4.53	21.03	3.69	0.00	49.20	26.07	73.93

1/ Includes fishing, cattle and silviculture.
2/ Includes import taxes.

SOURCE: DANE (1970-1990) and Banco de la Republica 91958-1969).
Author's calculations.

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TABLE A.1.5.
PRICE INDEXES AND INFLATION
(Index Base: 1970=100)

	CPI	%	PPI	%	FPI	%		CPI	%	PPI	%	FPI	%
1958	31.3		32.7		29.8		1973	149.7	20.88	155.2	23.17	178.5	31.46
1959	33.3	6.52	34.8	6.43	32.3	8.53	1974	186.4	24.55	215.0	38.53	233.5	30.80
1960	34.7	4.08	36.7	5.41	34.3	6.17	1975	228.6	22.63	262.9	22.28	279.1	19.54
1961	37.4	7.84	38.2	4.15	38.0	10.64	1976	273.5	19.64	324.2	23.32	356.9	27.85
1962	38.8	3.64	40.1	4.85	38.4	1.05	1977	366.0	33.83	398.6	22.95	482.1	35.10
1963	51.0	31.59	51.2	27.90	50.7	32.11	1978	431.3	17.84	460.0	15.40	539.9	11.98
1964	59.9	17.33	56.8	10.80	62.9	24.18	1979	537.4	24.61	597.7	29.93	713.2	32.10
1965	61.9	3.41	67.7	19.15	65.7	4.33	1980	680.3	26.58	761.4	27.39	895.1	25.50
1966	74.1	19.78	71.8	6.13	77.6	18.15	1981	867.3	27.50	955.0	25.43	1147.5	28.19
1967	80.3	8.26	78.8	9.75	83.7	7.84	1982	1078.2	24.31	1154.0	20.84	1432.8	24.86
1968	85.0	5.93	84.3	6.95	88.3	5.49	1983	1293.9	20.00	1382.2	19.77	1679.0	17.18
1969	93.9	10.40	91.4	8.44	96.5	9.32	1984	1502.0	16.09	1647.5	19.19	2008.2	19.61
1970	100.0	6.52	100.0	9.42	100.0	3.63	1985	1863.3	24.05	-	-	2568.8	27.91
1971	109.5	9.52	109.5	9.50	117.1	17.10	1986	2215.6	18.91	-	-	3165.9	23.25
1972	123.8	13.04	126.0	15.07	135.8	15.97	1987	2731.3	23.27	-	-	4024.3	27.11

CPI: Consumer Price Index
PPI: Producer Price Index
FPI: Consumer Food Price Index
SOURCE: DANE and Banco de la Republica.
Author's Calculations.

TABLE A.1.6.
PRODUCTION BY SECTOR 1975, 1981

	1975			1981		
SECTOR	g	s	sg	g	s	sg
20	37.16	25.29	9.39	-2.63	17.73	-0.45
21	35.96	8.01	2.72	1.55	10.57	0.16
22	4.10	1.59	0.07	2.34	1.35	0.03
23	-0.04	11.73	.00	-19.88	9.47	-1.88
24	28.12	3.53	0.99	1.57	5.07	0.08
25	32.76	0.88	0.29	4.01	0.54	0.02
26	8.29	0.42	0.03	-12.61	-	-
27	8.40	4.19	0.35	0.11	5.31	0.01
28	23.49	2.16	0.51	4.96	3.17	0.16
29	17.48	1.02	0.18	-1.71	0.69	.00
30	8.24	1.92	0.16	4.83	3.63	0.18
31	10.38	11.91	1.24	-49.33	19.31	-0.95
32	23.77	3.91	0.93	-56.69	-	-
33	17.22	3.90	0.67	-5.20	3.23	-0.17
34	15.88	3.19	0.44	-11.66	30.82	-0.36
35	15.61	3.97	0.62	-29.09	37.86	-0.11
36	12.19	1.97	0.24	-11.66	1.45	-0.17
37	4.73	2.28	0.11	-29.39	4.41	-0.13
38	39.98	5.53	2.21	-4.86	4.51	-0.22
39	9.13	2.60	0.24	0.29	3.05	0.01

g: Growth rate.
s: Share.
sg: Weighted rate of growth.
SOURCE: Author's calculations.

TABLE A.1.7.
INVESTMENT BY SECTOR 1974, 1979

	A. 1974				B. 1979		
SECTOR	g	s	sg	SECTOR	g	s	sg
20	4.73	14.68	0.69	20	-9.68	17.95	-0.17
21	-105.56	7.19	-7.59	21	19.69	10.02	0.20
22	112.01	0.82	0.92	22	33.26	0.99	0.03
23	19.12	15.66	2.99	23	4.31	16.76	0.07
24	31.48	2.08	0.65	24	-4.09	2.51	-0.01
25	94.10	1.66	1.56	25	-62.20	0.58	-0.04
26	19.39	0.35	0.06	26	12.16	-	-
27	12.03	3.70	0.45	27	-11.51	0.30	.00
28	28.44	2.58	0.73	28	241.14	4.53	1.09
29	12.19	0.58	0.07	29	-24.67	0.57	-0.01
30	48.80	2.17	1.06	30	65.66	1.82	0.12
31	34.44	12.26	4.22	31	30.90	8.46	0.26
32	104.70	9.44	9.88	32	-15.95	-	-
33	18.99	7.15	1.36	33	-1.36	9.99	-0.01
34	41.46	5.22	2.16	34	-15.15	2.82	-0.04
35	11.16	40.00	4.46	35	16.94	3.42	0.06
36	29.95	1.89	0.57	36	-11.12	1.59	-0.02
37	18.95	1.87	0.35	37	18.38	2.64	0.05
38	67.49	2.55	1.72	38	3.28	5.30	0.02
39	26.30	3.64	0.96	39	-34.59	4.48	-0.16

N Industrial sectors classified with CIIU 1 Base
s: Share of each industrial sector, average of annual participations.
g: Growth rate.
sg: Weighted rate of growth: share x growth rate.
Source: Author's calculations.

A.1-2 INTERNATIONAL STANDARD INDUSTRIAL CLASSIFICATION OF MANUFACTURING ECONOMIC ACTIVITIES (ISIC-1968)/1

			DIVISION 3. MANUFACTURING.
	31		Manufacture of Food, Beverages and tobacco
20		311-312	Food manufacturing
21		313	Beverage industry
22		314	Tobacco manufactures
	32		Textile, Wearing Apparel and leather industries
23		321	Manufacture of textiles
24		322	Manufacture of wearing apparel, except footwear
	29	323	Manufacture of leather and products of leather, leather substitutes and fur, except footwear and wearing apparel.
24		324	Manufacture of footwear,except vulcanized or moduled rubber or plastic footwear
	33		Manufacture of Wood and Wood products, Including Furniture
25		331	Manufacture of wood and wood and cork products, except furniture
26		332	Manufacture of furniture and fixtures, except primarily or metal
	34		Manufacture of Paper and Paper Products, Printing and publishing
27		341	Manufacture of paper and paper products
28		342	Printing, publishing and allied industries
	35		Manufacture of Chemicals and Chemical, petroleum, coal, Rubber and Plastic Products
31		351	Manufacture of industrial chemicals
31		352	Manufacture of other chemical products
32		353	Petroleum refineries
32		354	Manufacture of miscellaneous products of petroleum and coal
30		355	Manufacture of rubber products
39		356	Manufacture of plastic products not elsewhere classified
	36		Manufacture of Non-Metallic Mineral Products except Products of Petroleum and Coal
33		361	Manufacture of pottery, china and earthenware
33		362	Manufacture of glass and glass products
33		369	Manufacture of other non-metallic products
	37		Basic Metal Industries
34		371	Iron and steel basic industries
34		372	Non-ferrous metal basic industries
	38		Manufacture of Fabricated Metal Products, Machinery and Equipment
35		381	Manufacture of fabricated metal products, except machinery and equipment
	36	382	Manufacture of machinery except electrical
37		383	Manufacture of electrical machinery apparatus, appliances and supplies
38		384	Manufacture of transport equipment
39		385	Manufacture of professional and scientific and measuring and controlling equipment not elsewhere classified, and of photographic and optical goods
39	39	390	Other Manufacturing industries

A-1.3. THE COINTEGRATION METHODOLOGY

The CI methodology offers a way of overcoming the consequences of nonstationarity for the statistical properties of estimators and tests [26]. Although standard regression techniques can not be applied, it can be shown that if the variables involved keep the type of relationship characterized by CI, their relationship can be estimated superconsistently by OLS (Stock. 1984). Further, in the two steps procedure, the CI methodology preserves the possibility of both retaining the levels' information by means of an ECM model [27], and allowing the data to determine the dynamics of the model (Hendry & Mizon, 1978. DHSY, 1978. Hendry, 1986. Dolado & Jenkinson, 1987).

Let us start by introducing the notion of cointegration as well as its connection with the concept of equilibrium. The vector of series x is said to be cointegrated of order d,b (CI(d,b)) if being I(d), there exists a vector of coefficients α such that $z = \alpha'x$ is I(d-b), b>0. In particular, if N=2 and d=b=1 we have for the series x and y, which are I(1), that although in general any linear combination of them is I(1), if there exists a such that $z = x - ay$ is I(0), they are cointegrated of order 1 and the CI parameter a is unique (Granger. 1986). Now, the fact that this linear combination is I(0) despite those series individually being I(1), in other words, that z, as opposed to x and y individually, does not have dominant long wave components, means that a is such that the bulk of the long-run components of x and ay cancel out. Similarly, when we draw from economic theory the operation of forces which tend to keep x and y together and postulate the existence of a long-run equilibrium relationship between them, we are implying that x and y cannot drift too far apart. This expressed in terms of the characteristics of the equilibrium error z means that it must be stationary (Engle & Granger, 1987). Therefore, this reduction of the order of integration so that z is I(0) appears as the statistical condition for the possibility of an equilibrium relationship between x and y. Or, in terms of hypothesis testing, if it is impossible to reject the hypothesis of a random walk (RW) representation for z (i.e. to accept the hypothesis of the stationarity of the process by rejecting the presence of unit roots), the estimated equilibrium would be misleading and irrelevant.

Testing for CI of x and y is not different from testing for the stationarity of z. That is, in order to test the null hypothesis of non CI for those series all we have to do is to test the null of a RW representation for z. Therefore, the obvious methodological procedure in order to do so is to run the CR (cointegration regression) $x = c + \alpha y + \epsilon$ and apply the DF and ADF tests, as well as a modification of the SB test, to the error ϵ [28]. For the DF and ADF tests we use the standard t tables for rejecting the unit roots hypothesis in favour of stationarity [29]. As for the SB, in the same way that when testing for unit roots a DW from the regression $x = c + u$ significantly higher than zero allows one to reject the hypothesis of x being a RW, when testing for CI a DW from the CR (CRDW) significantly higher than zero allows us to reject the hypothesis of non CI.

Finally, we consider the link between CI and ECM both from a statistical and from a methodological viewpoint. The former concerns the implication of the Granger Representation Theorem

that cointegrated series have an ECM representation, and, conversely, an ECM generates cointegrated series; in other words: if x, y are I(0) without trends in mean and are cointegrated, there always exists a generating ECM of the form

$$\Delta x = - p\ z + \text{lagged } (\Delta x, \Delta y + d(B)c$$
$$\Delta y = - p\ z + \text{lagged } (\Delta x, \Delta y) + d(B)c$$

and data generated by such an ECM must be cointegrated (Granger, 1986). This existence (given CI), of an ECM representation which is not liable to the problems of spurious regression gives rise to the EG2S methodology (See Granger, 1983. Granger and Engle, 1985. Engle and Granger, 1987). This consists of the performance of a levels regression testing for cointegration, followed by the estimation of the ECM model including the residuals in place of the levels terms, as shown. In this way, we use CI in the first place as a pre-test to avoid spurious regression situations, and only after rejecting non CI we move to the specification in lagged changes in order to model z by the ECM [30].

NOTES OF CHAPTER 1

1. Terms of trade improved in 1945-54, deteriorated in 1955-67 and improved up to 1973. Cycles of Table 1.1.2. are determined by the response of GDP and manufacturing growth to these movements in terms of trade.

2. This phase included two subperiods. 1) The 1900-1930 pre-ISI development of the production of simple consumer goods (food, textiles, beverages) stimulated by growing export revenues. 2) The 1930- 1945 start of the ISI process under protection provided by the Depression and World War II. The 1931 tariff and an opportune devaluation stimulated industrialization so that growth resumed, GDP growing at an annual rate of 8% and manufacturing at 11% during the late thirties, industrial growth led by textiles, beverages, and petroleum products.

3. Manufacturing grew at an average annual rate of 7.06% and labour productivity at 3% (Ocampo et al. 1987).

4. As for the sources of demand growth (see below for methodology) IS plays a decisive role during the downturns of the external cycle, while DD (domestic demand) dominant role was clearer during the boom periods (Ocampo. 1991).

5. The importance of MNCs in the development of the sector remained low by Latin American standards: only 16% of investment in manufacturing by the end of sixties was carried out by MNCs (Berry. 1983). Similarly, only 8% of industrial output was produced by the state sector.

6. The strictest measure of protection came as late as the reforms of 1959 and 1964, quantitative restrictions been increasingly used to face the growing foreign exchange constraint. However, effective protection utilized by colombian manufacturing was rather low (25%) by Latin American standards (Hutcheson. 1973).

7. From 1948 to this reform massive devaluations were undertaken every three to five years, and a multiple rate regime discriminated against coffee and petroleum exports.

8. Manufactured exports accounted for 43% of growth of minor exports in the period 1967-1970, with an annual rate of growth over 30% in 1970-73.

9. The expansion of this period was supported by the minor exports take off and capital inflows stabilization; import capacity was favoured also by the improvement in terms of trade.

10. The IFI (Instituto de Fomento Industrial) became more of a financial intermediary.

11. On the domestic front, the increase in both fiscal and current account deficits accompanied a rise in inflation. On the external front, the collapse of coffee prices was followed by the tightening of the international market in 1982, and the Venezuelan crisis at the begining of 1983.

12. The initial phase emphasized import controls and export promotion, while the adjustment program focused on public

expenditure control and acceleration of exchange rate devaluation.

13. Much of our argument focuses on the accumulation of short term events both in the policy and the conjunture of the economy during the critical period 1974-82. However, the effect of this succesion of short term events operated against the background of long term elements. In particular, the effect of the neoliberal wave which for all practical purposes created a "political IS exhaustion" must not be underestimated.

14. The combination of expansion of the service sector with a return of the exports structure back to primary goods points to a de-industrialization process.

15. Huge public projects in sectors 32 (oil) and 34 (steel) distort the evolution of the series; if these sectors are included the rate of growth of I increases substantially for 1982.

16. The cyclical behaviour of P and I becomes consistent with a lag in the accelerator effect during the critical period after 1974: the initial contraction in P went up to 1975 and in I up to 1976; the subsequent rise took place in 1976-79 for P, and in 1977-81 for I; the subsequent deepening of the contraction lasted from 1980 to 1983 for P, and from 1982 to 1985 for I; the final expansion took place for P in 1984-87 and for I in 1986-87.

17. The crisis of the early eighties deepened that of 1974-75 revealing the vulnerability of the sector as a result of its inability to re-structurate during the seventies.

18. The post-1974 pattern differs from the previous pattern in two respects. Firstly, it has a lower rate of growth, statistically illustrated by a Chow test for structural change of trend (see Table 1.2-1). Secondly, its greater instability illustrated by the greater volatility of the annual rate of growth (e.g. 1978 versus 1975 and 1981 for P, and 1978 versus 1974 and 1983-85 for I).

19. The worst falls in rate of growth from 1967-74 to 1974-82 took place in IG an KG. According to the weighted rate of growth in the 1974-82 subperiod, the crisis was concentrated in textiles (23), tobacco (22) and non-electrical machinery (36); in 1978-82 textiles (23), transportation equipment and material (38), others (39) and metallic products (35). In the critical years 1975 and 1981-82 the most affected sectors were textiles (23), chemical products (31) and foods (20).

20. The worst falls in rates of growth from 1967-74 to 1974-82 took place in KG and IG. According to weighted rate of growth, in 1974-82 the crisis was concentrated in textiles (23), rubber (30), non-electric machinery (36) and metal products (35); in 1978-82 in textiles (23), beverages (21) and non electric machinery (36), the latter, rubber (30) and non-metallic minerals (33) with negative rates of growth. In the critical year 1974 the worst falls in rates of growth took place in chemicals, textiles and non metallic minerals.

21. See section 3.4.2.

22. See section 3.4.3.

23. This is due to the contribution of public expenditure and the decline in food price inflation to the 1984 expansion, and the role of coffee income expansion in the 1986 expansion.

24. This contribution of EX was weakened by the acute fall of 1983 (to a great extent caused by the Venezuelan crisis). Meanwhile, the contribution of IS may be overestimated in that the 1983 fall in M was linked more to the recession, while that of 1985 was linked to the adjustment programme.

25. The financial aspect of the recovery illustrates the failure to overcome structural difficulties. Although recovery manifested itself in improved firm performance in terms of debt and liquidity indicators, this improvement was limited and concentrated in particular sectors (Serrano. 1988). Similarly, poor prospects in terms of long term credit and shares indicate the persistance of structural limitations with regard to funds sources.

26. The fact that the first and second sample moments do not converge to their population counterparts implies that the analysis of non-stationary variables requires a different statistical framework from the standard stationary case. In this direction, we have on the one hand, the so called spurious regression problem pointing to the pitfalls of the analysis based on levesl of trending variables as result of the bias of conventional tests towards rejecting the null hypothesis of no relation even when it is true (Granger, Newbold. 1974); and, on the other hand, that the coefficients of the regression do not converge in probability as the sample size increases, and the t distribution diverges so that there are not asymptotically corect critical values.

27. An ECM postulates (Sargan, 1964. DHSY, 1978) that a proportion of the disequilibrium from one period is corrected in the next period, and that one such model would relate the change in one variable to past equilibrium errors and to past changes in both variables.

28. Additionally to the obvious requirement of an R2 from the CR close to one.

29. In the case of having more than two variables in the cointegrating vector, where α is not unique so that there can be several equilibrium relationships, the critical values of the (statistic are correspondingly higher (see Table taken from Engle and Yoo. 1987. p. 157).

30. The imposition of the constraint given by the CR upon the ECM model expresses the introduction of the impact of the long-run theoretical equilibrium relationship upon the short-run dynamic model.

2. INVESTMENT AND ITS FINANCE

This chapter focuses on the determinants of investment dynamics and the deterioration of financial conditions. An introductory section provides the theoretical framework for these analyses.

2.1. THEORETICAL FRAMEWORK

We now summarize the main elements of the theoretical framework underlying the analysis of this chapter. Sections 2.1.1. and 2.1.2. consider the determinants of investment dynamics and the restrictions constraining these dynamics. Section 2.1.3. focuses on the effect of financial conditions in determining investment.

2.1.1. THE DETERMINANTS OF INVESTMENT

2.1.1.1. The investment model.

In our flexible accelerator model with liquidity and foreign exchange constraints, investment decisions are determined by demand and profitability expectations, while the implementation of these decisions is restricted by credit and foreign exchange availabilities. Notional investment demand is given by

$$I^* = I(\Pi^e , D^e)$$

while effective investment demand is given by

$$I = \min(I^*, I^{\xi} , I^{\lambda})$$

where:

Π^e : expected profitability

D^e : expected demand

$I\xi$: level of investment permitted by the foreign exchange constraint when binding

$I\lambda$: level of investment permitted by credit restriction when it is binding.

The following analysis elaborates on the distinction between determinants and restrictions. While the former imply a typical flexible accelerator and profit-liquidity model, the latter introduce a disequilibrium situation.

2.1.1.2. The determinants of investment.

There are two types of rationalization of the inclusion of a demand term, the flexible accelerator and the Kalecki-Steindl (K-S) approach. The flexible accelerator emerges from the addition of adjustment lags to the simple relationship between desired capital stock and output posited by the naive accelerator. Thus, the better empirical performance of the flexible in comparison to the naive accelerator emphasizes the relevance of the conditions under which a sluggish response of investment to output should be expected [1]. Similarly, the output term has been shown to be overwhelmely superior to the cost of capital or relative prices terms (see among others: Junankar 1972, Nickel 1978, Peterson 1987, and Precious 1987).
With regard to the rationalization of the accelerator in terms of optimizing behaviour, this indicates the pervasiveness of the imperfect competitive situation in which a demand constraint affects the demand for capital services [2]. Meanwhile, two implications of the K-S approach for the demand element in the investment function are worth mentioning. First, the importance of the combined action of demand and profit elements, which is expressed in Kalecki's view that entrepreneurs push their investment plans up the point at which they cease to be profitable due to limited market or increasing risk and

limitations in capital markets (Kalecki. 1971) [3]. Second the accelerator is limited as an adequate representation of the demand factor, as stressed by Steindl's argument on the crucial role of capacity utilization following from the idea that firms build capacity ahead of demand expansions [4]. This, in effect, means that investment decisions take place not as a result of any increase in the level of production, as the accelerator would imply, but only as a result of increases which exert pressure upon existing capacity, i.e. push the level of utilization over the normal level.

We consider two arguments in favour of the introduction of the profitability element: first the role of profits as a source of finance, and second the expectations element of profits. The finance role of profits under the pervasive conditions of imperfect capital markets is at the core of the K-S approach as is shown by the emphasis on the principle of increasing risk (Kalecki. 1971) and how internal accumulation pushes forward the barriers set to investment plans by this factor (Steindl. 1976) [5]. Thus, in a flexible accelerator model of the Eisner type the introduction of credit restriction implies a switching regimes situation. Investment is then conditioned upon earnings fluctuations whenever the constraint implies not only a cost effect but also a liquidity effect (Tybout. 1983) [6]. With regard to the expectations element of profits we have, on the one hand the influence of expected profits, and on the other hand, the information conveyed by current and past levels of profits. The evidently crucial role of expected profitability for investment decisions, with the subjective elements implied by uncertainty conditions, is emphasized, for example, by J Robinson's assertion that, for a given state of "animal spirits", the rate of accumulation is a function of the expected rate of profits. Meanwhile, current and past levels of profits are involved in the formation of these expectations [7]. Two points concerning expected profitability deserve further consideration. First the advantage of using the rate of profit rather than the level of profits as the profitability argument in the investment

function in that it also considers the negative influence of the capital stock [8]. Second, regarding the influence of technical progress on expected profitability, the possibility of incorporating more efficient techniques can make the expected rate of profit independent of past levels of profitability [9]. In this way, investment following a deterioration in profitability reveals efforts to offset the competitiveness erosion which contributed to that deterioration.

2.1.2. RESTRICTIONS AND DISEQUILIBRIUM

2.1.2.1. The restrictions.

Foreign exchange and credit constraints are pervasive in developing countries. The combination of foreign exchange rationing through import licensing imposed by the external gap, and the need to import the bulk of investment goods (due to the absence of a domestic capital goods sector), implies that firms' investment demand becomes effective to the extent of being allocated foreign exchange reserves in the form of import licenses. Similarly, uncompetitive capital markets, the limited development of the financial sector, and considerable government intervention in the market for funds through development banks, imply that the firms' investment demand becomes effective only when they are favoured in this credit rationing situation. Therefore, in contrast to some post Keynesian analyses (e.g. Minsky) which introduce an inelastic supply of investment funds, i.e. market-clearing at a sharply increasing price, we consider different regimes according to whether a market- clearing situation or an excess demand situation exists [10].

When the supply of either foreign exchange or credit falls short of the demand implied by investment plans, effective investment is determined by the short side of the market. Disequilibrium lies in the entrepreneurs inability to carry out investment decisions due to the lack of credit liquidity (Cr) and foreign

exchange (R). Rather than an excess of demand for capital goods, it is the gap between notional demand and effective demand resulting from the "spillover" due to an excess of demand in the Cr and R markets. Given administrative rationing of both Cr and of import licenses, instead of a great number of submarkets (Muellbauer), we assume that at an aggregate level the minimum model applies:

$$cr=\min(cr^D,cr^S)$$
$$r=\min(r^D,r^S)$$

where: cr^D/cr^S: demand/supply of the long-term credit flow for investment (= ΔCr: stock increase).

r^D/r^S: demand/supply of foreign exchange flow for the importation of capital goods (= ∇R : decrease of stock).

2.1.2.2. The disequilibrium model

We now illustrate the need for a disequilibrium approach and introduce the model we estimate. Strictly speaking, however, this is not a switching regime model; it is a weak version of a disequilibrium model in that it introduces the constraints as excess demand dummies. This approach is necessary due to problems created by the introduction of foreign exchange and credit variables as additional arguments. In addition to bias in the estimators [11] difficulties arise in interpreting the coefficients of the foreign exchange and financial variables. Appendix A-2. considers the impact of the "spillover" determined by the disequilibrium of the Cr and R markets; while causality runs from these variables to I when constraints are binding, a pull in the opposite direction takes place when there is not excess demand for CR and R. Thus, in order to give due consideration to the various regimes the function

$$I=\min(I^{*}, I\xi , I\lambda)$$

is estimated. However, because of estimation problems with disequilibrium methods [12/] we use an alternative method which allows us to integrate all three regimes in one equation. We use indexes of excess demand for credit and foreign exchange which identify the periods in which the respective restriction is or is not binding, cancel out the argument when it is not binding, and measure its impact when it is binding. We use the following specification:

$$I= a + b\Pi^{e} + cD^{e} + d\lambda + e\xi$$

with λ and ξ being (the inverse of) excess demand indexes with the characteristics mentioned, i.e.

$$\lambda = \frac{cr^{S} - cr^{D}}{cr} \quad \text{if} \quad \frac{cr^{S} - cr^{D}}{cr} < 0$$

$$\lambda = 0 \quad \text{if} \quad \frac{cr^{S} - cr^{D}}{cr} \geq 0$$

and

$$\xi = \frac{r^{S} - r^{D}}{r} \quad \text{if} \quad \frac{r^{S} - r^{D}}{r} < 0$$

$$\xi = 0 \quad \text{if} \quad \frac{r^{S} - r^{D}}{r} \geq 0$$

Cr^{D} and r^{D} are estimated in the following way:
cr^{D}: With the years identified as with unlikely excess demand we estimate $cr^{D} = a + bGDP$. With the estimated coefficients we generate cr^{D} as $crD = \hat{a} + \hat{b}GDP$.

r^{D}: With the years of greatest foreign exchange solvency, we

estimate M= a + bGDP; a level of desired imports is generated with the estimated coefficients as: $M^* = \hat{a} + \hat{b}GDP$. The level of desired reserves is estimated as the amount which is needed to buy six months of desired imports: $R^* = 1/2\ M^*$. Hence, we use this as a proxy for r^D, assuming that the stock level is a measure of the flow-decrease acceptable to authorities.

2.1.3. THE FINANCING OF INVESTMENT

To consider the influence of financial conditions on investment activity, we proceed in three stages. First, we reiterate the pivotal role of internal accumulation as a source of investment finance. Secondly, we concentrate on the importance of credit availabilities for investment expenditure. Thirdly, we consider the influence of the structure of the firms' assets and liabilities. While the first and second sections focus on the complementarity of retained profits and credit liquidity through time, the third emphasizes the burden imposed by the legacy of past financing activity.

2.1.3.1. The role of internal accumulation

We are interested in four aspects of the role of internal accumulation. The first is related to the dual character of financial conditions: internal cash flow financial resources are crucial in determining investment decisions; credit liquidity is a constraint when demand for this form of external funding exceeds its availability. Second, the recognition of the importance of the link between retained profits and investment activity goes hand in hand with that of the method of finance for investment decisions in conditions of imperfect capital markets. Given that the cost of capital is not independent of the wealth of the firm's owners (Nickel. 1978) [13], past profits influence investment behaviour and the financial and investment policies of the firm are interlocked in the form assumed by post Keynesian

analyses, e.g. Minsky (1975) and Wood (1975) [14]/. Third, the principle of increasing risk is considered in its general form by emphasizing the increasing cost of financing investment externally (Fazzari, Mott. 1987). The implied restriction [15]/ in access to credit liquidity imposes a bias in the financial structure of the firms towards reliance on internal funds. Fourth, the role of credit liquidity is based on the complementarity through time of internal and external funds. In addition to the long-run post Keynesian link between investment and profits [16]/, credit liquidity complements retained profits by filling the gap resulting from the inconsistencies in the timing of earnings and outlets, a role emphasized by Keynes' Finance motive of the demand for money.

2.1.3.2. Credit availability and investment activity

The crucial importance of credit liquidity for investment activity is forcefully illustrated by Keynes' argument about the key role of banks in allowing expansion without the investment market becoming congested through a shortage of cash [17]/. We now consider the influence of credit liquidity upon investment. The asymmetric character of this influence is expressed in the fact that while strictly positive excess demand for credit can frustrate the implementation of investment plans, negative excess demand does not motivate those plans. It is illuminating to contrast the approaches of Tybout and Stiglitz with the post-Keynesian approach in which as soon as the amount of needed resources exceeds the level of internally generated funds the cost of capital increases either through demand or through supply price. The latter advantageously emphasises the higher cost of external finance, which Tybout introduces not as a rule but only with the peculiar situation of a liquidity constraint. However, the Post-Keynesian approach [18]/ does not consider this non market-clearing situation, the relevance of which has been stressed by Stiglitz's (among others) analysis of the rationality of credit rationing (Stiglitz & Weiss. 1981) [19]/. The importance of this consideration goes, in our case, beyond the

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fact that banks prefer to ration instead of supplying the fringe of unsatisfied borrowers at a higher interest rate [20], since we are dealing with a situation of administratively imposed ceilings on the rate of interest. Now the crucial implication for the determinants of investment is the need to include an argument capturing the influence of the availability of credit along with internal funds (i.e. profits) within the determinants of investment whenever firms are liquidity constrained [21].

2.1.3.3. The influence of financial structure

The dual effect through time of an increase in leverage is illustrated by Steindl's approach to the effect of indebtedness. After relating positively the rate of investment to current increases in the gearing ratio within an accounting framework, his investment function includes the negative influence of the gearing ratio accumulated in the past. To look at this aspect of the cost of external finance, i.e. the debt burden upon the cash flow, we consider the basic fact that a deterioration in the financial position of firms may force them to curtail investment expenditure in order to face their liability commitments. Three aspects of Minsky's well-known argument about the implications of past financial decisions upon firms' expenditure (Minsky. 1975 and 1985) are relevant: first, the impact of the subjective perceptions of financial risks over the cycle upon the dynamism of investment through demand prices of capital assets; second, with the deterioration of expectations the indebtedness-contraction spiral comes into operation [22]; thirdly, increased need of credit liquidity generated by this process faces a supply affected by the crisis in confidence of bankers. This analysis complements that of the Dutch Disease syndrome in section 3.1. In this scenario, the upswing in activity and the accompanying financial expansion are brought about by extraordinary primary export revenues whose deterioration contributes to the collapse of the speculative boom fostered by that liquidity. In this way Minsky's results are reinforced by the fact that the

vulnerability of the liabilities and assets structures of firms is enhanced by the fact that the upswing is entirely financial without real investment playing a leading role.

2.2. THE DETERMINANTS OF INVESTMENT DYNAMICS.

We now introduce the results of the estimation of the model of the previous section. Various previous studies have obtained econometric support for similar models for the Colombian manufacturing sector, i.e. Bilsborrow (1968), Chica (1983), Chica (1984), Ospina (1976), and Ocampo et al (1985) . Particularly interesting contributions in this direction are Bilsborrow's findings on the significance of the internal funds of enterprises as a determinant of investment decisions, and the availability of foreign exchange to render effective demand for capital goods. Chica's (1984) results adding lagged profits to capacity utilization (introduced as an accelerator variable), and that of credit to foreign exchange availabilities (see equations 1 and 2 of table 2.2-1) are also relevant [23/]. However, all the afore-mentioned works (with the exception of some specifications in Chica. 1984) have the problem of introducing these availabilities as determinants and not in terms of excess demands in a disequilibrium regime.

As for our results (see Table 2.1-1), equations 1 and 2 bring out the influence of the demand and profitability determinants, as well as the credit and foreign exchange constraints, conforming a lag structure which is consistent with our theoretical framework [24/]. From this starting point we attempted to advance in two directions, namely the estimation with disequilibrium regimes, and the extension of the period of estimation into the eighties. With regard to estimation within disequilibrium regimes, we have been unable to solve the problems mentioned in the last section and have failed to obtain satisfactory results in experiments with disequilibrium methods proper [25/], the results presented were obtained with the alternative method

TABLE 2.2.-1

INVESTMENT FUNCTIONS

Period	R ²	D.W	C	U	U-1	π-1	π-2	Π-1	Π-2	CrLP	DCrLP	DDi	D1
1-	0.86	1.96	2113	4251				0.6371			0.5301	0.123	
			(-0.85)	(1.65)				(3.78)			(2.03)	(6.13)	
2-	0.86	2.22	-4734	5149				0.352		0.538		0.0742	
			(-2.16)	(2.36)				(2.20)		(3.39)		(3.99)	
3- 1960-82	0.92	1.59	-7004.9		11453.8		2368				0.88828	0.2649+	4477.4
			(-2.81)		(4.49)		(2.25)				(5.52)	(9.13)	(7.84)
4- 1960-82	0.92	1.58	-6548.7		110747				0.0822		0.73298	0.2196+	3877.5
			(-2.60)		(4.25)				(2.03)		(4.24)	(7.28)	(6.59)
5- 1960-80	0.89	1.47	-6715.5		8203.5		7523.6					0.141+	
			(-2.19)		(2.56)		(5.03)					(8.284)	
6- 1960-80	0.89	1.59	-1742.5		3969.6	4980.5						0.1279+	
			(-0.36)		(0.74)	(2.025)						(4.51)	

Where:

C :Constant
U :Capacity utilization
π :Profit Rates
Π :Profit mass
CrLP :Long term credit
DCrLP:Credit availability
DDi :Currency availability
D1 :Dummy variable t 1: 1981-82
0: the rest

† The RCrLP credit restriction indicator was used for these regressions
+ An exchange restriction indicator in pesos was used

introduced above [26]. Extending the estimation period, the relationship collapses during the eighties [27] suggesting a structural change. On the one hand, a situation in which investment is carried out in spite of unfavourable demand and profitability conditions [28] is consistent with the innovation or collapse hypothesis mentioned in the last section [29]. On the other hand, the deterioration of financial conditions in the early eighties is consistent with the hypothesis of a change in the nature of the influence of financial factors working through profitability and credit restriction [30]. Thus, the need for technological innovation and the financial collapse of the early eighties may have caused the loss of stability suffered by the estimated investment function in these years.

The results obtained with the alternative disequilibrium method and a different treatment of the 1980s observations [31] are in Table 2.2-1. Equations 3 and 4 (for the investment series excluding sectors 34, 32 and 26 and introducing a dummy for 1981 and 1982) show the influence of expected profitability and internal funds through the rate and level of profit, with a lag of two periods, and the influence of more immediate demand conditions through utilization with one lag. They also show the credit and exchange restrictions in the current period in the years in which each of them operate. The statistics of both utilization and the restrictions improve in comparison to equations 1 and 2 by limiting these restrictions to the period in which they operate. Equations 5 and 6 (which are for the investment series excluding sectors 26 and 32 and 1981 and 1982 observations) show the same influences; although in 6 we see the harmful effect a reduction in the lag of the profit rate to one period on the utilization and restriction statistics [32].

Finally we consider the influence of financial factors on the dynamics of investment. Firstly, concerning the rate of interest, equations not included confirm previous results (Chica, 1983 and 1984), undermining its significance. This result is consistent with the hypothesis that one must work with credit availabilities

instead of with the rate of interest in situations of disequilibrium due to rationing [33]. Secondly, investment functions estimated with financial data from the firms' balance sheets confirm the strong influence of internal accumulation and sales income [34]. Thirdly, micro evidence from Fedesarrollo's managers' survey supports our aggregate econometric results: on the one hand, managers point to credit availabilities, not the interest rate, as the factor affecting investment activity; on the other hand, while big firms emphasize the role of the level of profits, small firms stressed they were restricted by credit rationing (Ocampo. 1988).

2.3. THE DETERIORATION OF FINANCIAL CONDITIONS

We now consider the deterioration of financial conditions for manufacturing activity during the period, in terms of both credit availabilities for manufacturing and the financial structure of the firms.

2.3.1. ECONOMIC POLICY AND CIRCUMSTANCES AND THE FINANCING OF MANUFACTURING.

We now consider two phases of economic policy making and its context affecting financial conditions of manufacturing: first, the "Reform with Stabilization" period up to 1978; and second, the "Liberalization and Collapse" period from 1979 to 1983.

2.3.1.1. "Reform with Stabilization"

The first phase was characterized by attempts at financial reform, which were thwarted by the stabilization policy implemented to handle the boom in coffee export earnings. The financial reform was designed to overcome the situation hindering

the development of the financial system in the early seventies. As in many developing countries, the diagnosis of "financial repression" within the Mc Kinnon-Shaw paradigm implied a policy of reform whose basic strategy was to free the creation and allocation of financial resources from state intervention [35]. Thus, an increase in the level and a reduction in the dispersion of nominal rates of interest were implemented. Furthermore, the portion of deposits subject to Central Bank control was reduced.

Although a process of financial deepening ensued, with the financial sector and the volume of financial saving growing substantially, conditions of credit liquidity for manufacturing did not improve. On the one hand, the tightening of monetary controls as part of the stabilization policy restricted the availability of resources. On the other hand, increasing competition for these resources from more profitable speculative and commercial activities increased costs and reduced access to credit for manufacturing. In this way, this phase ended in a paradoxical situation. In financial policy, a situation of "repression-disintermediation" with increased channelling of resources through the Central Bank Development Funds was the result of the stabilization package. For rationed firms in manufacturing, higher excess demand and costs of credit followed in the course of a repressed financial boom.

2.3.1.2. Liberalization and Collapse.

By 1979 the pressure of foreign exchange earnings on the money supply and the consequent priority of stabilization had receded. Liberalization of interest rates ensued, and Central Bank restrictions upon the free allocation of resources by financial intermediaries were lifted. Financial deepening intensified, accompanied by an aggravation in the financial conditions and structures of manufacturing firms. The deterioration of their financial structure sharpened. Meanwhile, increased competition for resources from both the government and the financial sector combined with a deceleration of the inflation rate to bring

about an explosion in the real cost of credit. By 1982 the crisis in manufacturing was compounded by the financial crisis considered below.

2.3.2. THE EROSION OF CREDIT LIQUIDITY FOR MANUFACTURING.

We approach the problem of erosion in credit liquidity for manufacturing from two complementary viewpoints (See Table 2.3-1.). First, we consider the decay in the dynamics of the credit flow to the sector, and the increase in its cost, as a consequence of the policy and the conjuncture elements of the previous section. Secondly, we illustrate the credit restriction of the sector in terms of the deterioration of financial availability relative to the needs of the sector.

2.3.2.1. The decline in credit to manufacturing.

The rate of growth of credit to manufacturing exhibits a long-term decreasing trend, with the severe fall of the eighties aggravating the decline of the sixties to the seventies. Moreover, this decay is more severe for long-term credit as a result of the transformation of the credit structure against long-term credit and the financing of fixed capital brought about by financial reform. As for the cost of credit, the nominal interest rate increased after 1972, particularly in 1975 as part of the financial reform. However, further increases in the nominal rate from 1978 onwards combined with the subsequent deceleration in the inflation rate to push the real rate up to two digits level by 1982. Thus, credit conditions for manufacturing activity deteriorated in the eighties, with regard to both availability and cost of funds. Factors contributing to this process included, the return to financial liberalization, the recession, the financial crisis, and competition for funds (from the financing of the fiscal deficit and the recuperation of the financial system).

TABLE 2.3-.
CREDIT LIQUIDITY INTEREST RATES

	Credit liquidity			Growth of Credit		Interest rate	
Year	Total liquidity (1)	Long Term liquidity % (2)	Development liquidity PI (3)	Total	Development Funds	Active Nominal	Real
1958	0.1125	0.0697	-	-	-	-	-
1959	0.1241	0.0769	-	-	-	-	-
1960	0.1063	0.0659	-	-	-	-	-
1961	0.1191	0.0738	-	-	-	-	-
1962	0.1309	0.0811	-	-	-	-	-
1963	0.1599	0.0991	0.0032	-	-	-	-
1964	0.1611	0.0999	0.0086	-	-	-	-
1965	0.1546	0.0957	0.0016	-	-	-	-
1966	0.1420	0.0880	0.0096	-	-	-	-
1967	0.1586	0.0983	0.0049	-	-	-	-
1968	0.1659	0.1028	0.0041	-	-	-	-
1969	0.1695	0.0968	0.0105	-	-	-	-
1970	0.1537	0.0921	0.0201			12.50	3.81
1971	0.1232	0.0762	0.0217			15.20	0.11
1972	0.1153	0.0734	0.0119	-6.60	-14.55	17.30	-4.77
1973	0.1209	0.0723	0.0098	26.47	68.36	18.90	-14.17
1974	0.1113	0.0719	0.0341	25.60	8.04	25.40	2.55
1975	0.1278	0.0655	0.0076	-21.25	18.96	25.20	1.52
1976	0.1223	0.0576	0.0108	21.84	13.93	28.10	4.19
1977	0.1379	0.0656	0.0112	15.18	32.99	26.70	9.79
1978	0.1329	0.0651	0.0217	19.01	6.73	28.80	-0.87
1979	0.1148	0.0558	0.0107	-6.01	-7.21	33.40	4.72
1980	0.1306	0.0562	0.0094	15.27	6.68	34.60	7.31
1981	0.1290	0.0421	0.0091	-26.71	-2.53	37.40	13.70
1982	0.1285	0.0463	0.0124	-3.31	-4.00	38.00	15.22

(1) Total credit/production
(2) Long and medium term credit/production
(3) Long term developmet funds credit/production

TABLE 2.3.-2
FINANNACIAL STRUCTURE OF MANUFACTURING SOCIETIES
(Percentages)

Assets	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Cash	2.1	2.3	2.4	2.6	2.8	2.9	3.1	3.3	4.0	3.2	3.9	3.3	2.9
Investments	5.6	5.1	5.0	4.7	5.1	4.5	4.2	4.1	5.3	4.7	2.9	5.5	4.9
Short term debt	23.2	23.4	24.2	26.1	23.4	24.2	26.2	27.7	24.6	25.4	29.5	27.3	25.4
Financial assets	30.8	30.9	31.6	32.4	31.2	31.2	33.5	35.1	34.0	33.4	36.4	36.1	33.1
Inventories	20.4	21.7	19.8	19.4	25.3	25.7	26.1	26.1	23.7	24.4	27.1	17.7	16.1
Total current assets	51.2	52.6	51.4	51.8	56.5	56.9	59.6	61.2	57.7	57.8	63.5	53.7	49.3
Long term debt	3.1	2.8	3.2	3.5	3.7	4.7	4.7	3.9	4.5	6.1	4.0	2.8	2.5
Prop.plant-equipement	22.8	22.8	23.0	22.5	20.2	20.5	19.6	18.0	16.7	15.5	0.0	30.4	32.5
Intangibles fixed assets	1.4	1.1	1.2	1.1	0.8	0.1	0.1	0.0	0.0	0.0	20.8	.0	.0
Defered	1.5	1.5	1.9	2.7	2.3	2.2	1.7	1.2	1.1	1.2	0.0	1.7	2.5
Other assets	5.1	5.5	5.1	5.3	5.3	5.1	4.8	4.5	6.5	6.7	5.3	4.7	5.5
Value and non-value	14.9	13.7	14.3	13.1	11.2	10.4	9.5	11.2	13.4	12.6	6.4	6.5	7.6
Total non current assets	48.8	47.4	48.6	48.2	43.5	43.1	40.4	38.8	42.3	42.2	36.5	46.3	50.7
Total assets	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Current	25.2	26.2	26.2	29.1	33.3	32.0	31.8	36.1	34.0	37.3	44.3	39.2	37.9
Long term credit	9.7	12.7	15.3	14.4	14.0	17.3	16.7	12.9	15.1	15.5	16.9	23.4	25.2
Other passives	2.4	2.6	2.4	2.5	2.4	2.6	3.1	2.1	2.1	1.9	2.1	1.9	1.9
Estimated passives	4.6	4.6	4.9	6.5	7.0	7.5	9.3	8.6	7.5	8.1	5.6	5.4	5.5
Diferred passives	0.6	0.6	0.2	0.2	0.3	0.4	0.6	0.7	0.6	0.8	0.9	1.4	1.2
Total non current passives	17.3	20.6	22.9	23.6	23.7	27.8	29.7	24.3	25.4	26.2	25.4	32.0	33.7
Total passives	42.5	46.8	49.0	52.7	57.0	59.9	61.5	60.4	59.4	63.5	69.6	71.2	71.6
Gained surplus	15.9	15.3	13.2	12.6	11.5	12.6	11.9	11.1	11.4	10.2	9.6	6.5	6.2
Capital surplus	18.5	17.4	19.0	17.1	14.9	13.1	14.2	14.9	16.0	15.2	8.3	3.5	11.1
Encercise result	7.1	6.2	6.2	6.4	7.0	5.5	6.7	7.1	7.9	6.3	5.3	3.8	2.3
Payed capital	16.0	14.3	9.8	11.1	9.5	8.8	7.7	6.6	5.4	4.8	7.1	9.0	8.8
Patrimony	57.5	53.2	51.0	47.3	43.0	40.0	38.5	39.6	40.6	36.5	30.4	28.8	28.4
Total passive patrimony	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Economic subjects, Statistical Bulletin No.3,4 (1981,1982). Superintendencia de Sociedades.
"Manufacturing Industry for Subgroups in General", 1980.

2.3.2.2. The erosion of the liquidity for manufacturing.

We now consider the deterioration of the credit conditions for manufacturing relative to the manufacturing sector's demand and relative to liquidity enjoyed by other sectors of the economy. We examine the operation of credit restriction upon manufacturing in three complementary forms. First, an index of liquidity, given by the ratio of credit flow to the level of production, exhibits a decreasing trend after the early seventies for total credit, and after 1969 for long-term credit. Secondly, an estimation of excess demand for credit (using the procedure for calculating credit restriction in section 2.2.1.) shows that the constraint was binding in 1975 for total credit and 1976 for long-term credit, and in 1972 and after 1981 in both cases. Thirdly, from the viewpoint of the dynamic evolution of manufacturing [36], the flow of credit fostered the expansion enjoyed by the sector until 1974, exacerbated its stagnation up to 1982, and hindered the recovery beginning in 1983.

The deterioration of credit conditions for manufacturing is also illustrated by comparing them with the credit conditions of the rest of the economy. Although the liquidity index of other sectors deteriorated in the early eighties, that of manufacturing began to decline in the late seventies and more severely (Chica 1988). Consequently, by the mid-eighties manufacturing lost its privileged position of the seventies vis-a-vis other sectors.

2.3.3. THE DETERIORATION OF THE FINANCIAL STRUCTURE OF THE FIRMS.

Throughout the period considered, and particularly during the seventies (see Table 2.3-2), manufacturing firms suffered a deterioration of their assets-liabilities structure, with equity decreasing relative to loan capital. At the same time, their assets structure suffered a falling ratio of long-term assets to current assets, with an expansion of securities and a fall in fixed capital concentrating in the period 1974-1977. The

liabilities structure, in turn, was particularly affected by the rise in short-term debt and the decline in share capital, which was concentrated in the period 1973-78. Moreover, the process of financial adjustment to the phase of reform with stabilization affected manufacturing in a particularly severe way (Chica. 1988) [37]. The increasing fragility of the financial structure during this period combined with the profitability crisis during the subsequent liberalization and collapse phase to culminate in the financial crisis of the early eighties.

2.3.4. FINANCIAL CONDITIONS AND INVESTMENT IN MANUFACTURING

We summarize the consequences of the above financial developments for investment activity in manufacturing. First, a combination of events is revealed in the high indebtedness and low liquidity indexes of the sector. The acute fall in credit liquidity in the early eighties was linked to insolvency resulting from the combination of accumulated debt of the late seventies and the explosion in its cost before the collapse of 1982-83 [38]. Second, elements of the financial deepening process which affected the dynamics of investment in manufacturing are epitomized by the ensuing collapse of the shares market. This collapse was linked to substitution in the portfolio of both savers and firms of financial assets for equity and fixed capital; the lack of response of investment to the increase in financial savings was linked to the channelling of resources to more profitable alternatives [39]. Finally, a double-sided relationship developed with the crisis in industrial profitability contributing to the channelling of resources to those higher returns activities [40]. Thus, by 1982 the feedback between the financial crisis and the real crisis deepened in a characteristic process [41] in which the profitability deterioration of productive activity, aggravated by the increase in the cost of finance, was accompanied by an insolvency which contributed to and was worsened by the lack of liquidity in the financial sector.

The impact of these processes on financial conditions for investment in manufacturing not only placed credit constraint upon the implementation of investment decisions but also impaired the conditions conducive to these decisions. The deterioration in the internal accumulation and flow of share capital was compounded by portfolio substitution of firms towards financial assets, and decapitalization and debt costs. These processes combined with the lack of liquidity stemming from the insolvency of the financial system to deteriorate financial conditions for industrial investment. The financial crisis combined with the crisis of the manufacturing sector to epitomize this deterioration.

APPENDIX A-2.

We now consider difficulties in interpreting the coefficients of r and cr if we estimate an equation in which they are introduced as arguments irrespectively of whether each restriction is binding or not. In other words assume that to measure the impact of exchange and credit availabilities we estimate $I = a+b\Pi+cP+dr+ecr$ for the whole period instead of $I=\min(I^*, I\xi, I\lambda)$.

To consider the impact of the "spillover" determined by disequilibrium in the "capital goods imports" segment of the foreign exchange market , we focus on the two arguments of $r=\min(r^D, r^S)$. We have $r^D=R(I^*)$, and [42] $r^S=\xi^S-nP$

where: ξ^S: reserve availabilities given by the balance in the current account of the rest of the economy (B) and the the reserves the authorities are prepared to spend (Ra), i.e. $\xi^S = Ra+B$ [43].

nP: imported inputs required by manufacturing to produce P

We have then two possibilities:

a) If the reserves constraint (RC) does not bind, because either there is no excess demand for foreign exchange or because the credit constrain (CrC) is more restrictive, we have:

$$A^{RC} > I^{RD},$$

where: A^{RC}: investment (including the domestically produced component) which can be undertaken without facing a RC, i.e.

$A^{RC} = \xi^S+(k-n)P$, with k: participation of the capital goods sector in domestic production.

I^{RD}: investment (including the domestically produced component kp) corresponding to demand for reserves, i.e.

$I^{RD}=I^*$ when CrC does not operate, and $I^{RD}= I\lambda$ if CrC operates.

b) if RC operates

$$A^{RC} < I^{RD}$$

and $I=A^{RC}= I\xi = \xi^S+(k-n)P$

To consider the impact of the "spillover" determined by disequilibrium in the long-term credit market, we focus on the two arguments of $cr=\min(cr^D, cr^S)$. We have $cr^D=CR(I^*)=Cr^*$ if RC is not binding, and $cr^D=Cr^*-Cr(RC)$ if RC is operating [44], with Cr(RC) being Cr not demanded due to the operation of RC. We then have two possibilities:

a) If CrC does not operate either due to lack of excess demand for credit, or because RC is more restrictive:

$$A^{CRC} >= I^{CRD} ,$$

where A^{CRC}: investment which can be undertaken without facing a CrC, including other resources, i.e.retained profits ($\rho\Pi$) and receipts from selling financial assets ($-\Delta\phi$), i.e. $A^{CRC}=\lambda^S+\rho\Pi-\Delta\phi$.

I^{CRD}: investment (including other resources) corresponding to the demand for Cr, i.e. $I^{CRD}=I^*=Cr^*+\rho\Pi-\Delta\phi$ if RC does not bind, and $I^{CRD}=I\xi=Cr^*-Cr(RC)+\rho\Pi-\Delta\phi$ if RC does bind.

b) if CrC operates:

$$A^{CRC}< I^{CRD}$$

and: $I=A^{CRC}=I\lambda=\lambda^S+\rho\Pi-\Delta\phi$.

Therefore, we have different problems depending on which restriction is binding. If RC binds we have

$$I= I\xi = \xi^S + (k-n)P$$

with causality running from right to left (from ξ^S to I). Nevertheless, as it is always true that $I = r + (k-n)P$, when RC does not operate causality runs from left to right (from I to r). Meanwhile, if CrC binds:

$$I= I\lambda = \lambda^S + \rho\Pi - \Delta\phi$$

with causality running from right to left (from λ^s to I). However, as it is always true that $I = cr + \rho\Pi - \Delta\phi$, when CrC does not operate causality runs from left to right (from I to cr).

The two situations

$$I=\min(I^{RD},A^{RC}) \text{ with } I^{RD}=\min(I^*,I\lambda)$$

$$I=\min(I^{CRD}, A^{CRC}), \text{ with } I^{CRD}=\min(I^*,I\xi)$$

can then be summarized in the previously introduced function

$I=\min(I^*, I_\xi, I_\lambda)$

Now we can see what happens if we estimate $I = a+b\Pi+cP+dr+ec$ instead of this function which distinguishes among the three regimes. If we are estimating I^* we are not capturing the effect of ξ^s and λ^s on I, but instead the effect of I on cr and r. If we are estimating I_ξ we are capturing the effect of ξ^s on I and that of I on cr. If we are estimating I_λ, we are getting the effect of λ^s on I, and that of I on cr. Econometrically speaking then, the estimators are biased in each case by a correlation among the would be exogenous variables and with the errors [45].

NOTES OF CHAPTER 2

1. That is to say that demand expectations are based on current and past levels of demand, or that firms face adjustment costs, or that they operate under conditions of uncertainty, delivery lags and irreversibility of investment decisions. Replacing from $K^* = vQ_t$ in $\Delta K_t = \lambda(K^*_t - K_{t-1})$, which expresses how firms carry out only a fraction of desired I due to lags, an expression for ΔK_t as a function of K_{t-1} and Q_t is obtained, which after repeated backwards substitution gives the popular distributed lags model

$$\Delta K_t = v\lambda\Sigma(1-\lambda)^i\Delta Q_{t-i}$$

This expression can be also derived assuming that firms adjust K to their expected levels of Q, with this determined by past demand levels according to an adaptative expectations scheme (Precious. 1987). Similarly, the initial expression indicates how the influence of lags can be obtained by introducing adjustment costs into the present value maximization problem so that the optimal adjustment path in the presence of these costs is given by $I_t=\lambda(K^*_t-K_{t-1})$ (Junankar 1972. Nickel 1978). Thus, while in the lags interpretation the λ coefficient expresses (as an inverse function) demand (decision) and supply (delivery) lags, in the optimal adjustment interpretation it is an inverse function of the rate of interest. The lags interpretation, however, has the advantage of being based on incontrovertible facts (uncertainty and delivery lags) as opposed to the optimal adjustment, which relies on the existence of strictly convex adjustment costs (Nickel 1978).

2. In this case the cost minimization condition gives rise to a general form including a demand term besides the price terms (see e.g. Brechling. 1975). Under particular conditions, this can be shown to be the result of the problem of present value maximization by competitive firms of net future receipts, subject to the production function and the capital accumulation equation. Thus, Nickel (1978) shows that for the imperfect competitive firm the optimal investment path is given by:

$$dlK = dlD + \delta + \Gamma\, dlw - \Omega\, dlc$$

with Γ and Ω being functions of the elasticity of substitution and the elasticity of output with respect to marginal revenue, such that while the effect of an increase in the user cost of capital, c, is always negative ($\Omega>0$), that of an increase in wages, w, is positive ($\Gamma>0$) when the substitution effect dominates the output effect (and vice-versa). This gives rise to the simple accelerator relationship

$$I = v\,Q + \delta K$$

either when factor prices remain constant, or when the elasticities in Γ and Ω are such that these expressions approach zero, an approximation of the latter being the rationalization of the naive accelerator by a fixed coefficients technology (constant returns to scale assumed).

3. The close relationship between profits and demand in K-S demand constrained view of the firm is stressed by Kalecki's investment function in which the accelerator role is played by

the increase in profits. Similarly, an independent role for internal savings of firms is emphasized by Kalecki's criticism of the accelerator principle for overlooking the influence of retained profits. Meanwhile, the close correlation between profitability and the level of output is likely to create estimation problems. However, the exclusion of profitability on these grounds (e.g. Jorgenson) implies the loss of relevant information. More specifically, the reasoning behind the inclusion of both the rate of profits and capacity utilization in the investment function runs both ways: on the one hand, as seen in section 4.1. various factors combine with the level of output to affect the profit margin and productivity, and therefore the rate of profits; on the other hand, this level plays a particularly important role in itself. As is emphasized in 3.1 on the implications of Steindl's inclusion of this additional term, the influence of capacity utilization on investment decisions can not be completely subsumed by that of the rate of profit.

4. While the accelerator implies that full utilization is aimed at, the fact that firms keep reserve capacity (to increase their market share during the boom) implies a certain degree of excess capacity as the aim of the entrepreneurs (Steindl. 1976). In this direction Nickel (1978) considers the destructive implications of the introduction of uncertainty for the present value maximization criterion for investment decisions of the firms. First, the firm accepts the costs of keeping excess capacity to the extent that they are outweighed by the benefits of consequent flexibility; secondly, the lower is the firm's possibility of expanding production through substitution of labour for capital, the higher its need for flexibility provided by reserve capacity; thirdly, pervasive price rigidity points to the role of reserve capacity in the adjustment of supply to demand under imperfect competition. Meanwhile, elaborating on Steindl's argument, Fazzari & Mott (1987) emphasize how investment plans are linked to projected demand relative to current capacity, with this projection based on observed levels of utilization.

5. As emphasized in section 2.1.3, the admission (against the Modigliani Miller Theorem) of the relevance for investment decisions of the method of finance, in conditions of imperfect capital markets, is the starting point of the post Keynesian link between retained profits and these decisions in the face of the increasing cost of external finance.

6. Our investment function can be considered a reduced form comprising the situation in which credit rationing affects the adjustment path, and that in which profits assume the leading role as a result of a liquidity constraint.

7. Two additional mechanisms may be important in this direction (Peterson. 1987): on the one hand, current and past levels of profits convey information about planned levels of output in addition to that contained in current and past levels of output; on the other hand, in line with Tobin's q theory, profitability is likely to be high during periods in which the ratio of the

stock market valuation of installed capital to its replacement cost is high. In an "animal spirits" ´ direction, Peterson also points to the effect of accumulated profits on the psychological cost of capital.

8. This is emphasized by Steindl´s comment on Kalecki´s investment function (Steindl. 1976). Thus, both carrying costs and installed capacity effects work through the rate of profit via the capital stock and the level of profits.

9. One solution to this is to include a term for technical progress, accommodating Kalecki´s emphasis on the crucial role of the exhilarating effect of its incorporation in getting the system out of the slump and so maintaining its long term dynamism. However, practical problems in developing an adequate exogenous index of technical change incorporation suggest as a plausible alternative the use of dummies to capture significant changes in this respect. The same can be said of sociopolitical factors affecting entrepreneurs´ state of confidence, as is rightly stressed by the above mentioned argument of Joan Robinson about "animal spirits".

10. Prescious (1987) develops a dynamic disequilibrium analysis in which binding supply restrictions combine with demand constraints to prevent firms from moving onto their optimal path. Given that the supply constraint raises the marginal q, the firm will increase investment in advance whenever the constraint is anticipated. Unfortunately, its rational expectations assumption (allowing for the saddlepoint property according to which the economy moves along the stable path) and its extensive use of PV maximization (i.e. a perfect capital market guaranteeing the intertemporal equivalence of cash flows) renders this non-market clearing analysis inadequate for the analysis of the impact of a financial constraint. In this respect, the analysis of Tybout (1983) provides a more fruitful approach to our problem.

11. i.e. the upward bias which the estimation of a notional function generates in the coefficients of its arguments when the restrictions implying a disequilibrium are binding.

12. Consideration of three regimes without using prior information about the periods in which each of the regimes operates increase the risk of obtaining a very small number of observations corresponding to one of these regimes. This is a problem given the asymptotic character of the estimation methods.

13. Independence of financing and investment collapses once we acknowledge that essential characteristics of a capital market with uncertainty (like bankruptcy and risk of default) are ruled out in a world where individuals can borrow at a risk free interest rate, and financial transactions take place at a price which takes no account of the identity of the buyer and seller (Nickel. 1978). Nickel´s case is very interesting in that after obtaining the conventional results from the PV optimization apparatus in the perfect capital market world, he further argues that the concept of price-taking behaviour is self-contradictory

in the market of financial capital in a world of uncertainty. He shows the introduction of default risks negates the Modigiliani Miller theorem because firms' bonds are a risky asset which individuals can not reproduce.

14. As is recognized by Nickel, the introduction of uncertainty moves the analysis from the certainties of PV maximization into the foggy realms of group decision-making in a complex economic and institutional framework (Nickel. 1978). This is the starting point of alternatives to the Modigliani-Miller paradigm such as Wood's.

15. Although its original formulation by Kalecki emphasized the rise in risk with the size of capital investment, various Post-Keynesians authors focus on the implication of increasing risk with the size of external funding in various post Keynesian authors.

16. Emphasized in the analyses of Eichner, Harcourt & Kenyon, and Wood considered below.

17. Keynes' view of the crucial role of liquidity as a condition of the savings generation process, both at the stage of the finance interval (until ex-ante investment becomes effective) and in the savings adjustment process, has been emphasized in the debate on the relationship savings-finance-investment in Keynes and Kalecki (see Asimakopulos 1983 and 1986. Davidson 1986. Kregel 1986. Snippe 1985)

18. Remaining within the increasing cost stage we have Keynes' impact of both lenders' risk (due to moral hazard or involuntary default) and borrowers' risk; an impact which works in the Post-Keynesian analyses through the demand price of capital goods (as in Davidson and Fazzari & Mott) or the supply price of capital goods (as in Minsky).

19. Stiglitz develops the implications of the sorting and incentive effects of prices in markets for funds from imperfect information asymmetries inherent in these markets.

20. This results from adverse selection and incentive effects on expected returns of an increase in the interest rate. The former effect refers to adverse change in the mix of applicants as the more risk averse drop out of the borrowing pool as the rate of interest rises. The latter refers to inducement for the borrower to undertake riskier actions (Greenwald & Stiglitz. 1987), interpreted by Blanchard and Fisher (1989) in a moral hazard sense where the debt contract allows for bankruptcy.

21. We introduce the inverse of an excess demand index (which moves with the credit supply whenever that excess is positive) along with profitability. We thereby include the complementary views on the liquidity constraint of Tybout, emphasizing profits, and Stiglitz, stressing credit availabilities.

22. The increase in financial costs affects net returns, and the fall in investment, which follows the consequent decrease in the demand price of capital assets, brings about a fall in aggregate demand which further affects internal accumulation.

23. Ocampo's et al (1985) results show the influence of prices of capital goods counteracting the high income-elasticity of investment, capacity utilization specified as the deviation of output from its trend, and the foreign exchange restriction specified as import controls. Significant coefficients for the prices of factors of production (interest and wage rates) have been obtained in Rubio (1983); although (as Ocampo et al point out), the significance of the wage rate may be interpreted as a demand rather than a substitution effect.

24. Profits as a variable which expresses both the availability of internal funds and expected demand and profitability enters with a lag, while utilization and the restrictions are those of the current period. However, credit and foreign exchange availabilities are not treated so as to differentiate the excess demand regime from the regime in which the constraint is not binding.

25. With the use of two disequilibrium packages, Limdep and one developed by Prof Bourgignon of Paris University.

26. Now the restrictions are included so that they both cancel when the notional demand becomes effective, and does each individually when the other is binding. Meanwhile, the lag structure expresses again the idea of utilization used for checking longer term profitability expectations and the binding restriction acting in the current period.

27. Numerous experiments including observations up to 1985 failed to recover the expected parameters.

28. Although in 1981 the effect of the favourable conditions of 1979 and 1980 should have been operating; and in 1982 we have the bias introduced by sector 34.

29. According to which the previous deterioration of the conditions of demand and profitability is attributed to a competitiveness decline to be compensated for by incorporating more efficient machinery. In this sense utilization and the profit rate operate as indexes of the collapse expected if investment is not undertaken.

30. Statistical problems are also created by the severe credit fall of the eighties implying excess demand estimates which are too large.

31. The only way of overcoming the deterioration in the statistics produced by the introduction of observations for the eighties is by excluding the 1981 and 1982 observations or introducing a dummy variable in these years. The results obtained

by the exclusion and the significance level of the dummy show the loss of stability of the estimated relation for these years.

32. Due to the role of utilization in determining the profit rate, the fall in the significance of u-1 may be a result of including π-1.

33. This lack of significance must be qualified in two respects. On the one hand, the rate of interest may be affecting the dynamics of investment through the rate of profit and capacity utilization. On the other hand, it may be that the severe increases in the interest rate in the early eighties harmed that dynamics because there may be a threshold beyond which the influence of the interest rate becomes statistically significant. Indeed, one such effect could be contributing to the problems of stability of the estimated relation in the eighties.

34. Additionally, a flow of funds exercise shows that the internal accumulation of firms is sufficient in the long-run to finance investment in fixed capital. In other words, only in critical recessions when finance of inventories gains priority must resources of credit and of share capital be added to those of internal accumulation to finance both inventories and fix capital investment.

35. As is well known according to that paradigm, the lifting of restriction on the rate of interest would increase the volume of savings held by financial intermediaries. Similarly, the allocation of these resources by these intermediaries in accordance with the free market would guarantee the efficiency of their contribution to the process of economic development.

36. Considering the subperiods introduced in the analysis of the cycle of industrial accumulation in section 1.1.2, i.e. 1958-1967, 1967-1974, 1982-85.

37. A comparison of these tendencies for manufacturing firms vis-a- vis other sectors' firms shows that the substitution of both short term debt for share capital, and securities for fixed assets was more acute in manufacturing.

38. Two processes contributed to the combination of high indebtedness and low liquidity indexes during the seventies. The deterioration of the liabilities structure manifested in the high indebtedness index resulted from a decrease in the flow of share capital even more severe than that of credit. Furthermore, this fall in the dynamics of credit was concentrated in long-term credit, so that the more acute deterioration of the long-term liquidity index reveals the constraint suffered by the acquisition of fixed capital.

39. Financial and real estate speculation, and the finance of the importation and purchase of luxury goods, provided more

attractive outlets for financial resources than fixed investment in manufacturing.

40. Meanwhile, the increase in the cost of finance resulting from competition for financial resources from more profitable activities contributed to the deterioration in the profitability of productive investment relative to financial investment.

41. Various aggravating circumstances compounded Minsky's scheme of "expansion of the real sector-increase in financial risks-contraction of the real sector-credit restriction-crisis" in this case. The structural fragility of the financial sector (resulting from scarce capitalization, and high degrees of indebtedness and concentration), made it particularly vulnerable to the downturn in economic activity. In the real sector, the income expansion which accompanied the process of financial deepening was not linked to an increase in real investment, but to the speculative boom in real estate and financial sectors following the coffee and illegal exports extraordinary revenues.

42. It is assumed that the authorities give priority to inputs importation.

43. Ex-post the balance $iI=B-nP-(R-R_{-1})$ must hold
where: $B=X-M+F$
iI: imported proportion of capital goods
X: other exports
M: other imports
n: coefficient of imported inputs for industry (net of exports)
F: net capital flow

The availability of reserves for manufacturing ξ^S is given by the balance of the rest of the economy and Ra, which is given by the excess of the stock inherited from the previous period (R_{-1}) over the minimum stock below which authorities are not prepared to allow reserves to fall (R_m), i.e. $Ra=R_{-1}-R_m$.

44. It is assumed that firms demand credit after enquiring about the availability of foreign exchange.

45. Depending on the import-production structure an additional problem with P may arise. Given that it is always true that $I=r+(k-n)P=cr+\rho\Pi-\Delta\phi$, if the proportion of investment domestically produced is high and P is not lagged, its coefficient will not capture an accelerator effect but express a characteristic of that structure.

3. DEMAND CONDITIONS: DOMESTIC DEMAND AND FOREIGN TRADE

We now analyze the deterioration of demand conditions which, as we saw in section 1.2., combined with the worsening of financial and profitability conditions to generate the crisis of industrial accumulation. Sections 3.1. and 3.2. provide the theoretical and methodological framework for sections 3.3. and 3.4 which concern domestic demand and foreign trade. Section 3.5. summarizes the conclusions of the chapter.

3.1. THEORETICAL FRAMEWORK

The following analysis illustrates the diverse mechanisms underlying the deterioration of demand conditions for Colombian manufacturing in the critical period 1974-82. The summary of the theoretical relationships relevant for our analysis of demand conditions for industrial accumulation includes two sections: the first focuses on problems concerning domestic demand, and the second relates to foreign trade. First, we consider domestic demand problems created by an increase in the concentration in the distribution of income by an inelastic food supply and a boom in exports of primary commodities. Secondly, we look at the impact of an imports liberalization and a deterioration in export performance. From an analytical viewpoint, the different elements are related to each other by the common assumption that the manufacturing sector is a fix price market with highly elastic short term supply. Based on the empirical validity of the markup pricing and spare capacity assumption for the sector in Colombia, at least as a stylized fact, we present a set of analytical frameworks which belong to the Kaleckian-Keynesian family of models of supply determined prices and demand determined levels of output.

3.1.1. DOMESTIC DEMAND

We introduce a very simple multiplier-accelerator model to help us illustrate the contractionary effect of an increase in the concentration in the distribution of income. After presenting the basic relationships concerning demand and profitability in a one (industrial) sector closed economy model 1/ , and using them to show the operation of that contractionary effect, we add an agricultural sector and an external sector to illustrate the contractionary effects of both an inelastic food supply and a primary export boom. The final section introduces the specification of the domestic demand for domestic output used in the econometric estimations.

3.1.1.1. Distribution of income.

To highlight the K-S (Kalecki-Steindl) argument concerning the contractionary effect of an increase in the degree of monopoly, we focus on the causal thread running from this increase to a decline in the rate of investment brought about by the consequent drop in demand, and to the subsequent deterioration of profitability 2/. We start from Kalecki's distinction between shifts in profits due to changes in effective demand, and shifts which result from changed price-costs relations independent of demand (Steindl, 1979). Consider the rate of profits identity:

$$\pi \equiv muy \qquad [3.1.1]$$

where: $m = \Pi/Y$: share of profits in output
$u = Y/Y^*$: capacity utilization
$y = Y^*/K$: output-capital ratio at full capacity

This becomes an explanatory relationship once the share of profits, given excess capacity, is determined according to the mark up theory of prices, by an exogenously given markup μ, as

in

$$m = \mu / (1+\mu) \qquad [3.1.2.]$$

This follows from the price equation $p=(1+\mu)\,c$ expressing how prices are fixed by marking up unit prime cost (c) [3]. Therefore, the rate of profits is determined by profit margins, capital utilization, and capital intensity (Steindl, 1976) i.e.

$$\pi = [\mu / (1+\mu)]uy \qquad [3.1.3.]$$

This shows how the amount of profits made possible by the conditions of exploitation depends not only on technology (y), and class struggle (expressed in the degree of monopoly), but also on demand (u). In the interpretation of Rowthorn (1981), the profits curve in the space u-π (Π in quadrant SE of Graph 3.1.1.) indicates the amount of profits which is created at any level of capacity utilization, given existing methods of production and real wages.

Before turning to the problem of determining the amount of these potential profits which is realized by the conditions of aggregate demand (investment and saving), two points must be made regarding the meaning of the K-S stagnationist argument. First, concerning the working of the multiplier-accelerator framework [4], with the introduction of the accelerator side, we not only have Kalecki's double sided relation between profits and investment leading (in the absence of exogenous factors like technical progress) to stagnation once the profitability of investment (I) deteriorates; in Steindl's version, in conditions of concentration, a cumulative causation process ensues involving drops in u and further falls in I. Second, the implications of the rigidity of the mark-up are illustrated by contrasting K-S' analysis which integrates changes in the level and distribution of income with Kaldor's neglect of the former type of change resulting from his assumption of the flexibility of m as a mechanism for sustaining full employment. In K-S' analysis there

is a tendency for levels of demand to occur which are lower than the level required for full employment equilibrium [5]. Once the markup becomes exogenously determined, we have an entirely different situation regarding effective demand, as the analysis of the impact of an increase in μ will show. The repercussions of capitalist attempts to increase profits by raising prices can be broken down into two stages. In the first stage, as Kalecki argues, Π remain unchanged (determined by I) , but the level of Y will decline to the point at which the higher relative share of profits yields the same absolute level of profits (Kalecki. 1971) [6]. In the second stage, according to Steindl, the consequent fall in u also affects I and hence Π. Here the cumulative causation process becomes apparent: consistently lower levels of I and a rigid m bring about consistently lower levels of Y and Π.

Let us concentrate on the conditions of aggregate demand in terms of the Kaleckian realization theory of profits according to which (if there is no saving out of wages) profits are determined by capitalist expenditure (Kalecki, 1971.p.78). To simplify we assume that technology is given, and redefining u as Y/K we have:

$$\pi = mu \qquad [3.1.4.]$$

expressing how, in the short period, a shift in profits can occur through an increase in either the markup or in demand (Steindl, 1979). Adding u to π as an argument in Kalecki's Investment function (Steindl, 1976.p.127), we have:

$$g^I = I/K = i_o + i_\pi \pi + i_u u \qquad [3.1.5.]$$

This emphasizes how capacity utilization influences investment both indirectly through its effect on profits and directly in its own right (Rowthorn 1981). Additionally we introduce a Kaleckian savings function, i.e.

$$g^S = S/K = s_\pi mu \qquad [3.1.6.]$$

pointing out how once m becomes exogenous the burden of the process of savings adjustment falls upon u (Steindl, 1976. ch IX). Thus, the curves S and I in quadrant SW of Graph 3.1.1. show the saving and investment ratios for any level of u , given the aggregate demand parameters. The economy is at macroequilibrium at their intersection, i.e. the corresponding level of u is determined by those parameters:

$$u = \frac{i_o}{(s_\pi - i_\pi)m - i_u} \qquad [3.1.7.]$$

This expresses the multiplier-accelerator process in a form which emphasizes how given the standard Keynesian condition of stability $(s_\pi - i_\pi) - (i_u/m) > 0$ any increase in m results in a fall in u [7]. The resulting redistribution of income from wages to profits reduces workers' expenditure more than it expands that of capitalists', so that such a fall in u is the consequence of the resulting excess supply [8]. Furthermore, Steindl's addition of the influence of u upon I implies the inverse relationship between m and both g and π which is at the core of K-S' stagnationist argument. In Appendix A.3.1. we illustrate K-S' causality thread running from the fall in u to the reduction in I (accelerator), and from this reduction to the decline in Π (demand determined output and profits). The implications of this argument for an underconsumption analysis [9] are therefore linked to the importance of the accelerator term (i_u). Once we admit that investment not only depends on profits but also on demand (u), profitability becomes affected by consumption, and consequently a satisfactory level of accumulation requires adequate real wages [10].

3.1.1.2. Agricultural supply and demand for manufacturing production.

We now consider how the introduction of an agricultural sector causes additional effective demand problems for manufacturing.

In particular, we focus on the way an increase in the price of food manifests itself in a fall of demand for manufactured production, given plausible workers' and peasants' consumption patterns. We initially consider a model in which the manufacturing sector does not demand agricultural inputs. We then examine how the introduction of these inputs adds to the pressures likely to lead the economy into a situation of accelerating inflation resulting from an increasingly acute conflict over the distribution of income.

We move into the realm of two sector models [11]/ to consider the interaction between an inelastic supply-flex price agricultural sector, and an elastic supply-fix price manufacturing sector. We follow Cardoso's (1981) formalization of the Latin American structuralist theory of inflation [12]/, concentrating on the effects of inelastic food supply on demand for manufactured production. We start with a short-term model in which industrial prices and wages remain exogenous; we then move beyond this short-term assumption to consider inflationary dynamics. Besides adding an agricultural (A) flex price sector to our previous manufacturing (M) fix price one, and a peasants class to our previous industrial capitalists and workers, we assume as in the previous section passive money supply and an M sector producing a Consumption-Investment good. Investment is exogenous now; the A sector only produces food which as the main wage good faces (income and price) inelastic demand; the only variable input required by production in the M sector is labour, the supply of which is unlimited and which is demanded according to fixed production coefficients ($l=L_m/q_m$) to supply (elasticly since $u<1$) the demand for C and I goods both from the M and A sectors; the supply of food from the A sector is inelastic, determined by the given land cum capital stock ($q_a=k_aK_a$) so that it is mainly the price (p_a), and not the quantity as in the M sector, which moves to clear the market.

To arrive at the equilibrium conditions in both markets, we must introduce some considerations concerning prices and demand. Given

that the price of the M good is $p_m=(1+\mu)\omega l$ (ω:nominal wage rate), the real wage is given by $w=[\theta^{\alpha}(1+\mu)l]^{-1}$ with θ being the relative price (p_a/p_m) and α the share of the A good in consumption demand (CD). The price level of the economy is a linear homogeneous function of the two prices, i.e. $p=p_a^{\alpha}p_m^{1-\alpha}$. As for CD we assume linear expenditure functions:

$$p_aC_a = \delta CD + \phi p_a \qquad p_mC_m = (1-\delta)CD - \phi p_a \quad [3.1.8]$$

δ and ϕ are the marginal fraction of consumption expenditure allocated to food and the autonomous part of demand for food, respectively:

$$\alpha = \delta + \phi p_a/CD \qquad 1-\alpha = (1-\delta) - \phi p_a/CD$$

shows how the share of food decreases with an increase in expenditure (Engel effect) while that of the M good rises.

Supply-demand equilibrium conditions in the markets for the A and M goods are

$$p_aq_a = \delta CD + \phi p_a \qquad p_mq_m = (1-\delta)CD - \phi p_a + p_mI$$

Given q_a, p_m, and I, p_a moves to equilibrate the A market, and p_m to equilibrate the M market so guaranteeing that saving becomes equal to investment. Expressing them in terms of q_m, with θ instead of p_a:

$$AA: \; q_m = \theta[(1-\delta c_a)q_a - \phi] \,/\, \delta c_m$$

$$MM: \; q_m = \{\theta[(1-\delta)c_aq_a-\phi]+I\} \,/\, 1-(1-\delta)c_m \qquad [3.1.9.]$$

where c_a and c_m are the marginal propensities to consume of the two sectors, i.e. $CD = c_ap_aq_a + c_mp_mq_m$.

The solution of the system is illustrated in Figure 3.1.2. with

AA and MM depicting the points (θ, q_m) of equilibrium in the A and the M markets, respectively. AA will be positively sloped if, as we assume, the agricultural surplus exceeds autonomous consumption of A [13]; if an increase in q_m, driving the economy upwards from AA, takes place the resulting increase in demand for food will increase θ (p_a). Thus, all points to the left of AA represent excess demand for A and rising terms of trade for the A sector. We focus on the case where MM is negatively sloped, i.e. where there is a strong Engel effect implying a low propensity to consume the M good on the part of peasants [14]. Thus, if an increase in p_a occurs, driving the economy eastward from MM, the increase in the peasants' demand for M will not compensate the fall in workers' expenditure caused by the drop in real wages, so that q_m will decrease as a result of the consequent excess supply. At point e both markets are in equilibrium. By the same token, we concentrate on adjustments in θ (p_a) and q_m which eliminate excess demand according to the following rules:

$$\dot{q}_m = f([C_m(\theta, q_m)+I-q_m]p_m) \qquad \dot{p}_a = \dot{\theta} = g(p_a[C_a(\theta, q_m)-q_a]) \qquad 3.1.10]$$

stability [15] requiring AA to be steeper than MM and $I>0$ [16].

Looking at the effect of an excess demand for food, in the case of a shock adversely affecting the supply of food [17] the contractionary effect on the manufacturing sector is independent of MM being negatively sloped [18]. Meanwhile, in the case of an autonomous increase in demand for food (illustrated as a clockwise shift in MM) the contraction takes place only when there is a strong Engel effect. At this stage we may note that given that the stability conditions hinge upon a supply of food great enough relative to demand, a too severe shock of this type could render the dynamic movement unstable.

To analyze the inflationary implications [19] of the conflict resulting from the wage reaction associated with the increase in

p_a, we abandon the workers' passivity assumption and introduce their search for compensation for losses vis-a-vis the desired real wage (w*). In terms of the relative prices consistent with workers' desires $\theta^*=[w^*(1+\mu)1]^{-1/\alpha}$ becomes

$$\hat{\theta} = \epsilon (\theta-\theta^*) \qquad [3.1.11.]$$

Given that profit income is protected by a constant markup, so that capitalists keep a constant share ($\mu/1+\mu$) in q_m, p_m grows at the same rate as θ, i.e.

$$p_m = \hat{\theta} = \epsilon (\theta - \theta^*) = \epsilon(\theta-\{[w^*(1+\mu)1]^{-1/\alpha}\}) \qquad [3.1.12.]$$

which express the dynamics of p_m as a function of the gap between actual terms of trade and those compatible with workers' aspirations. Thus in figure 3.1.3. the schedules $\hat{q}_m=0$ and $\hat{p}_a=0$ (see below) represent equilibrium points in the M and A markets respectively: $\hat{p}_m=0$ represents the profit-wage conflict equilibrium (i.e. the locus of points at which $\theta=\theta^*$), so that at any point to the right of this threshold w is below the desired level and cost-push inflationary pressures emerge. In Appendix A.3.2. we consider how θ and q_m converge toward an equilibrium in which wages and both agricultural and manufacturing prices constantly rise. Given a sufficient supply of A and a sluggish response of p_a to excess demand of A, the economy converges towards this rest state. However, the fact that at this equilibrium there is structural excess demand for food and an enduring wage gap which manifest themselves in persistent inflation implies that it can not be a long-period equilibrium. As soon as either peasants or workers become aware of the excess demand for food or the wage gap, they react increasing g or ϵ, and bring about an inflationary spiral which renders the model explosive in the long period (Cardoso, 1981.p.277).

Finally, we consider how the equilibrium conditions are even more difficult to fulfil if the manufacturing sector demands part of agricultural output as an intermediate good. Appendix A.3.2.

shows how the existence of equilibrium hinges on a sufficiently large agricultural supply to meet increased needs; how stability conditions become more stringent; and how the contractionary impact of a fall in q_a upon q_m is more severe as a result of the negative income effect which now involves the two prices. Furthermore, inflationary pressures and the underlying conflict over the distribution of income become more severe. Demand pressure stems from demand for A as an input in the production of M, and a direct cost push adds to the indirect one via wage reaction. Hence the economy's movement to a new equilibrium with a higher rate of inflation critically depends on wage reactions to higher food prices and on the time pattern of the chain of responses by capitalists and workers along the adjustment process. The analysis of this sort of dynamics is tackled in section 4.1. The character of the new equilibrium, and the greater stringency of the conditions for stable convergence towards this equilibrium, are discussed in Appendix A.3.2.

This illustrates the complications involved in by the introduction of an agricultural sector with regard to both demand for manufactured production and inflationary pressures reflecting the conflict over the distribution of income. These complication are compounded if the manufacturing sector demands part of the agricultural output as an intermediate good.

3.1.1.3. Primary export boom and the level of manufacturing production.

We now concentrate on the mechanisms responsible for the contraction in the manufacturing sector following a primary export boom discussed in the Dutch Disease literature [20]. Three types of models illustrate aspects of those mechanisms [21]. First, within an internal and external balance framework we consider both the fall in domestic production as a result of excess saving, and the deterioration in the trade balance as result of the appreciation of the real exchange rate. Secondly,

a stock equilibrium model including a financial sector allows us to emphasize the crucial role of fiscal and monetary policies. Thirdly, within the Traded (T) Non-traded (NT) Salter-Swan framework, we consider the shift of economic activity from the traded goods sector (manufacturing) towards the non traded sector (food or services) [22].

To present the contractionary effect of a foreign exchange boom upon an industrial sector which demands imported inputs and exports part of its output abroad we follow Taylor (1983, 1984) in considering this effect within a two balances framework as resulting from increased savings in the internal balance and exchange rate appreciation in the external balance. The new price equation and supply-demand equilibrium are:

$$p = (1+\mu)\,[wl+Ep_1^{*}a] \qquad [3.1.13.]$$

$$pq = pC + p\sigma I + [\epsilon_0+\epsilon_1(Ep^{*}/p)]pq \qquad [3.1.14]$$

where E: exchange rate

p_1^{*}: foreign price of the imported input

σ: fraction of I which is domestically produced

p^{*}: world price of goods similar to the manufactured exports

Dividing the two balances [23] by the value of the capital stock pK, we obtain the equilibrium system

$$[\sigma+(1-\sigma)ep_k^{*}]g - (s_\pi\mu/1+\mu)u - eb = 0$$

$$[e(p_1^{*}a-\epsilon_1p^{*})-\epsilon_0]u + ep_k^{*}(1-\sigma)g - eb = 0 \qquad [3.1.15.]$$

with e=E/P, and b=B/K.

With u and e as the adjustment variables an increase in b brings about a contraction of the level of production and an appreciation of the rate of exchange. Appendix A.3.3. illustrates

how in the internal balance the rise in foreign saving implies an excess supply situation which is eliminated by a fall in u; and in the external balance the reduction in the excess demand for foreign exchange is compensated by an appreciation (i.e. fall) in the exchange rate. A more relevant alternative to this analysis [24/] is provided by a disequilibrium analysis with excess demand for foreign exchange. In this way the process in which we are interested may be seen as a movement towards the equilibrium situation (onto the notional demand for imports), from one in which binding quantitative controls reflect that excess demand [25/]. However, due to the type of imports introduced in this model, i.e. complementary production goods, we can not illustrate here the contractionary effect of competitive imports, which is considered in section 3.1.2.

We now consider the second model which emphasizes the crucial role of fiscal and monetary policies for the contraction of manufacturing resulting from a primary export boom. We follow the analysis of Pesaran (1984) with a model which adds to the Keynesian elasticity of supply, a private absorption function including wealth within its arguments and a government budget constraint [26/]. We summarize Pesaran's argument to highlight the crucial role of fiscal and monetary policies in a world incorporating a financial sector and the corresponding portfolio adjustment, and a public sector and the associated operation of a budget constraint [27/].

While the price equation remains the same [28/], for equilibrium in the commodity market now including government demand, we have

$$y = a(y_d, \phi_{-1}/p, i) + g - b \qquad [3.1.16.]$$

where y/y_d: real national income/private disposable income.

a: real private absorption.

ϕ_{-1}: initial financial assets of the private sector.

g: real government expenditure.

b: real deficit of the current account

For this latter deficit, including now the production of the A sector, all of which we assume is exported, we have

$$b = \delta m(\alpha+g,\delta) - \delta A - x(\delta) \qquad [3.1.17.]$$

with real imports m being a function of total absorption (α+g) and the competitiveness index $\delta(=ep^x=Ep^x/p$, i.e. the real exchange rate), real exports a function of this index, and A the real value of agricultural exports in terms of foreign prices 29/.

For the financial sector, we introduce three relationships: the first for net acquisition of financial assets in terms of the government budget constraint; the second for changes in the supply of high powered money in terms of government lending policy; and the third for the demand for real balances. Appendix A.3.3. presents the basics of the model concerning the short and long run impact of an increase in A. It illustrates how in the short period the impact of this increase on q crucially depends on fiscal and monetary policy parameters and on the interest elasticity of private absorption. For the long-term impact, it also illustrates how y falls in so far as δ declines, and how an increase in g-t is needed to avoid a fall in q.

Finally, we consider two models within the Salter-Swan framework (Corden & Neary 1982, and Wijnberger 1984) where a higher transfer leads to excess demand for NT goods which manifest itself in a supply (wages) shock upon the T goods sector 30/. Leaving aside the resource (labour) movement (towards the booming sector) effect in Corden Neary's analysis, the spending effect refers to the increase in the price of NT as a result of the extra spending brought about by the increase in real income; a real appreciation takes place (the ratio of the T's price to the NT's price falls). Given that in this analysis the main mechanism is the pulling of resources towards the booming sector, to have a demand effect we have to involve the strong Engel effect of the last section. Alternatively, to have a more relevant supply

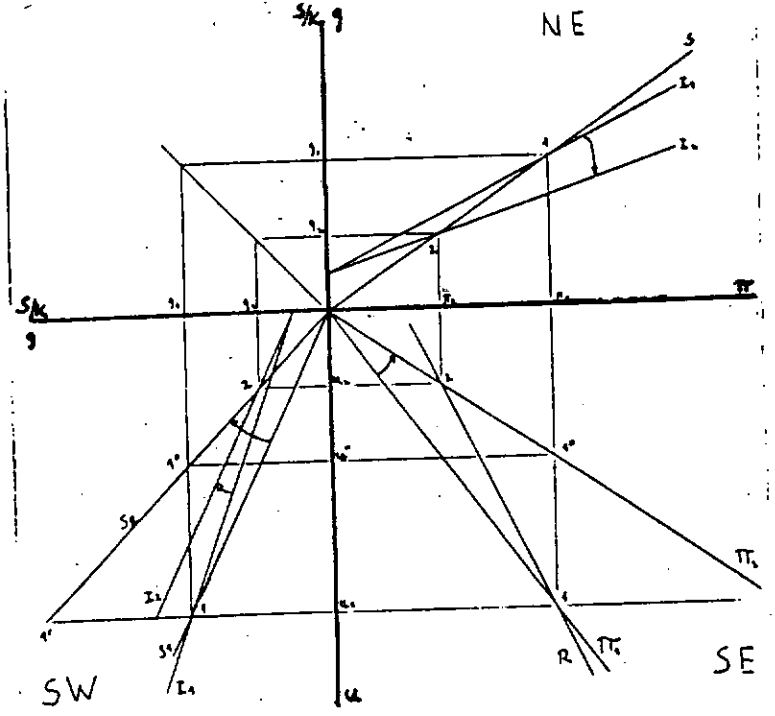


FIGURE 3.1.1.

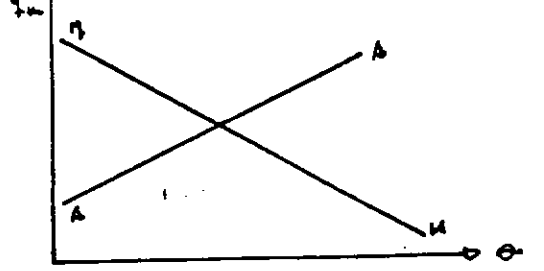


FIGURE 3.1.2.

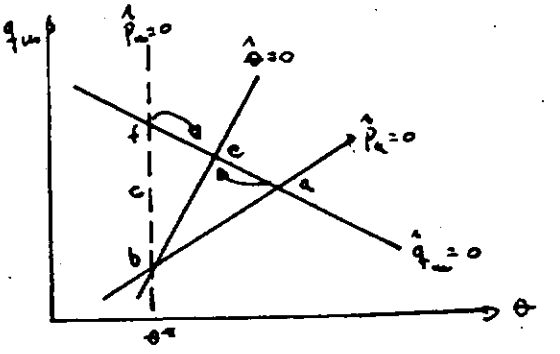


FIGURE 3.1.3

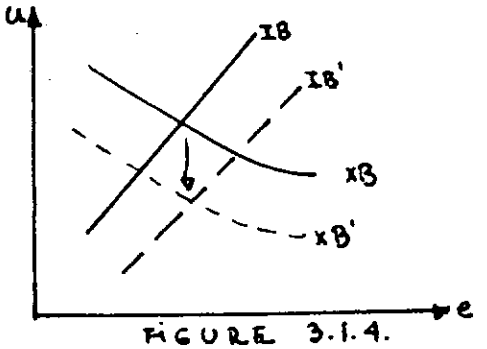


FIGURE 3.1.4.

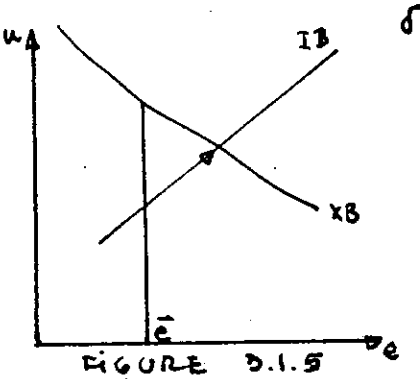


FIGURE 3.1.5

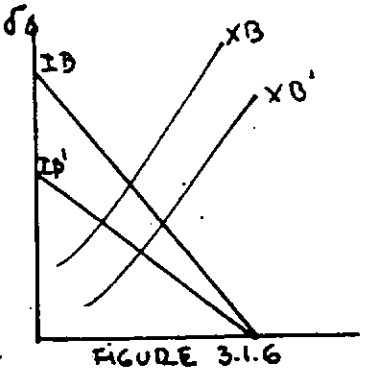


FIGURE 3.1.6

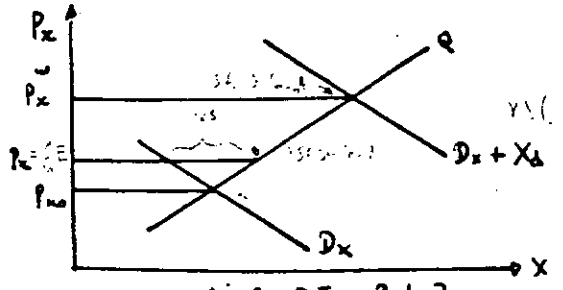


FIGURE 3.1.7

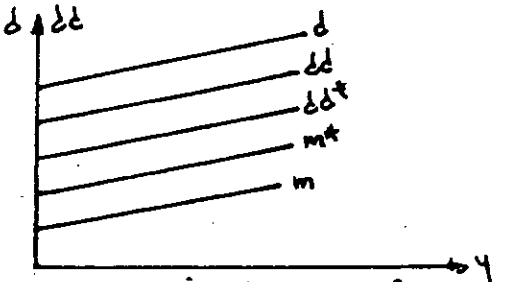


FIGURE 3.1.8

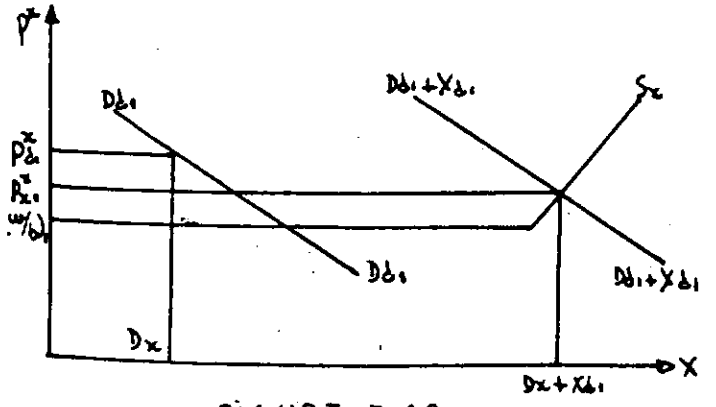


FIGURE 3.1.9.

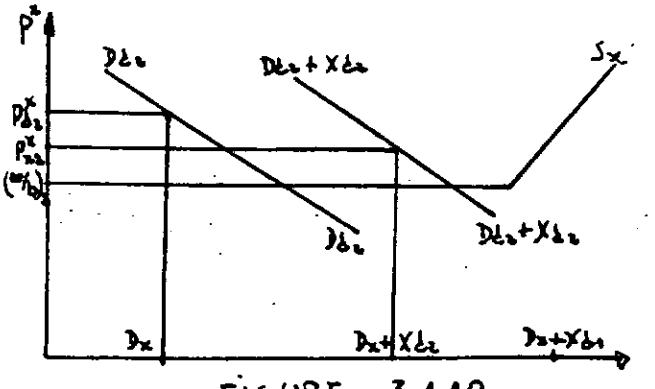


FIGURE 3.1.10

effect (given unemployment and a clear segmentation of the labour market across sectors), we involve the increase in wages considered by Wijberger. Assuming wage indexation to the CPI, real appreciation implies a higher real wage in terms of T goods (whose price is fixed by the small-country assumption), and the T sector is affected by increased labour costs pressures 31/.

3.1.1.4 The specifications

As we are interested in demand for domestic production, we have to exclude the segment of demand for imported production. Assume that both the domestic demand for domestic production and the domestic demand for imported production face perfectly elastic supplies, so that the quantities produced and imported are demand determined. Therefore, assuming a simplified linear homogeneous functional form which includes only an income variable and a relative price variable, we have for total domestic demand:

$$q + m - x = dd(y, rp) \qquad [3.1.18]$$

where: q: real manufacturing gross output
m: real imports
x: real exports
y: real aggregate income
rp: relevant relative price

The domestic demand for domestic production is:

$$q - x = dddp(y, rp_d, i) \qquad [3.1.19.]$$

i being a term for imports competitiveness which includes the determinants of the allocation of demand between imports and domestic production, i.e. relative prices and the level of quantitative controls.

3.1.1.4.1. Domestic demand for consumption goods. The following

variables affect the domestic demand for consumption goods:

1) Income and its distribution: The inclusion of the level of income is implied by both the elementary theory of consumer demand and the life-cycle permanent income approach; that of distribution is supported by both the restrictive nature of the assumptions required for aggregating between consumers, and by the post Keynesian-structuralist argument.

2) Domestic relative prices: The inclusion of relative prices is implied by the theory of demand; particularly as we are dealing not with aggregate consumption but with consumption of manufactured goods.

3) Liquidity and wealth: The inclusion of liquidity is implied by the analysis of credit rationing in conditions of imperfect financial markets; that of wealth by the modified life-cycle analysis adopted.

4) The impact of imports, which can be seen either as a competitiveness effect through relative prices , or as an excess demand effect of import controls.

Therefore, for domestic demand of domestically produced light consumption (LC) we have 32/:

$$QDLC = a + b\,y + c\,m + d\,pra + e\,i$$
$$QDLC = a + b\,W/pc + c\,m + d\,prc + e\,i \qquad [3.1.20]$$

For durables (CD) we have the following:

$$QDDC = a + b\,yd + c\,prc + d\,i + e\,\lambda$$
$$QDDC = a + b\,m + c\,prc + d\,i + e\,\lambda \qquad [3.1.21.]$$

3.1.1.4.2. Domestic demand for production goods. This demand is

affected by the same four variables, although modified as follows. 1) The income variable is replaced by the level of production of the relevant producer who is demanding the input. 2) Relative prices are those of the corresponding products relative to the general level of prices. 3) Liquidity and wealth is given by credit availability.

Therefore, for domestic demand of domestically produced intermediates (IG) we have:

$$QDIG = a + b\,q + c\,prp + d\,i + e\,\lambda \qquad [3.1.22]$$

For capital goods (KG):

$$QDKG = a + b\,u + c\,\pi + d\,i + d\,r + f\,\lambda \qquad [3.1.23.]$$

3.1.1.4.3. Domestic demand for the whole manufactured production. This demand is affected by the same four variables. Therefore, for domestic demand for domestically produced manufactured goods we have:

$$QD = a + b\,prp + c\,d + d\,\lambda \qquad [3.1.24.]$$

Where:

QDLC : Domestic demand for domestically produced LC
QDDC : Domestic demand for domestically produced CD
QDIG : Domestic demand for domestically produced IG
QDKG : Domestic demand for domestically produced KG
W : Wage fund.
pc : Consumer price index
m : Share of profits in income
prc : Relative price to pc
pra : Relative price to agricultural food.
yd : Disposable income.
i : Impact of imports, i.e:
prm: Relative price to imports.

IQC: Index of quantitative controls

λ: Index of Liquidity or of Wealth, which can be:

Cr/p: real credit

M1/p: real money.

A/p: real value of financial assets

p: Producer price index

prp: Relative price to p

r: interest rate

d: Index of autonomous income, which can be:

f: Index of fiscal stance.

x: Index of coffee exports.

3.1.2. FOREIGN TRADE

We now consider the demand conditions for industrial accumulation from the viewpoint of foreign trade performance. Section 3.1.2.1. introduces the basic framework for the analysis. Section 3.1.2.2. focuses on the impact imports liberalization on industrial demand. Section 3.1.2.3. considers aspects related to the deterioration of exports.

3.1.2.1. Introduction.

3.1.2.1.1. The demand impact of foreign trade. The consequences for manufacturing of a reduction in the volume of net exports (X-M, with X and M standing for manufactured and exports respectively) are clear; nevertheless it is useful to set the problem within the usual multiplier framework 33/. For simplicity we assume exogenous I and X, and notional demand for M determined only by Y, i.e. $M^*=h^*+iY$. Meanwhile the effective amount of imports is given by $M= M^*-qc$, where qc is the excess demand caused by quantitative controls. We treat the impact of these controls like an autonomous shift in the imports function to have: $M=h+iY$, with $h=h^*-qc$. The level of Y is given by

$$Y = [I+X-(h^*-qc)] / (s+i) \qquad [3.1.25.]$$

so that the multipliers $Y_x = Y_{qc} = 1/(s+i)$ show the positive (negative) impact upon the level of demand of increases (decreases) in the level of X (and qc) 34/.

The underlying framework of sections 3.1.2.2. and 3.1.2.3. emphasizes the quantity determinants of the imports expansion and export deterioration. Specifically, we assume a binding demand constraint, in the case of M in the domestic market, and in the case of X in the world market. Thus the analysis of the impact of the liberalization of M stresses how the spillover of excess demand for importables brought about by the quota which allowed the supplier of the domestic substitute to increase capacity utilization, is eroded with the lifting of quantitative controls. The analysis of the deterioration of X emphasizes on the fall in external demand brought about by both the world recession and by the reduction in competitors' prices stemming from rising productivity.

3.1.2.1.2. Factors determining import expansion and export deterioration. A crucial determinant common to these two processes is the erosion of competitiveness. We consider this in terms of competitiveness index δ, which in the case of the markets for the exportable is $\delta=Ep_x^*/p_d^*$ 35/. We are interested in two situations. First, we look at modifications of e ($=E/p_d$) as a result of changes in the relation between the rate of devaluation and the rate of inflation of domestic prices; i.e. real appreciation effects. Any increase in p_d which is not compensated by a proportional one in E (so that $dE/E<dp_d/p_d$), brings about a deterioration of international competitiveness 36/. Assuming a constant mark-up in the price equation this deterioration takes place to the extent that the rate of growth of ω exceeds those of E and b (the inverse of l, i.e. labour productivity). Second, changes in relative unit costs as a result of differentials in the growth of wages and productivity growth vis a vis competitors; i.e. relative unit costs effects.

International competitiveness deteriorates to the extent that the excess of the proportional growth of wages over the proportional growth of productivity is greater for domestic production than for world competitors 37/. Both the former real appreciation effect and the latter relative unit cost effect also work in the domestic market in the face of competitive imports.

3.1.2.2. The impact of import liberalization.

We approach this problem in two stages. Section 3.1.2.2.1. focuses on the Keynesian mechanisms involved in the demand impact of imports liberalization. Section 3.1.2.2. concentrates on the impact of quantitative controls on the demand for domestic production and on the level of imports.

3.1.2.2.1. Keynesian effects of import liberalization. The possibility of a negative demand impact of imports liberalization is considered through the addition of a balance of payments constraint to our spare capacity and fix domestic price framework. To emphasize the mechanisms involved we consider two lines of this Keynesian argument applied for the opposite purpose to that of their original presentation, i.e. to illustrate the demand contraction brought about by a reduction in import controls. First we discuss the CEPG case on the advantages of protection vis-a-vis devaluation as a means of achieving a demand expansion without worsening either the balance of payments or the real wage. Secondly, we consider the Keynesian disequilibrium regime analysis which emphasizes the export demand conditions in which imports restrictions bring about an expansionary imports substitution process.

The CEPG argument (Cripps, Godley. 1976. Godley, May. 1977), was designed to show how, in conditions of real wage rigidity, protection offers an alternative to the spiral of devaluation-domestic inflation associated with efforts to expand the level of economic activity without worsening the balance of payments.

As the criticisms of the CEPG proposal have pointed out 38/ its case hinges on the extent to which the response of the supply of domestic substitutes for restricted imports is through quantities rather than prices, so that the excess demand for imports translates itself into an equivalent expansion in production 39/. Therefore, in the CEPG framework a negative impact of import liberalization would appear as a reversion of the effect of the imposition of controls which had brought about a forced substitution effect exceeding its disabsorption effect; i.e. as a reversion of an increase in demand for domestic substitutes greater than the hoarding imposed by rationing 40/.

The expansionary effect of protection requires the breaking of the inflationary chain either at its initial link, i.e. the unresponsiveness of profit margins to quota profits, or at the following link, i.e. the absence of wage reaction. In other words, it assumes either a demand determined level of output and a supply determined level of prices, or, should margins respond to import substituting demand expansion, wage resistance behaviour unaffected by this expansion. The extension of the first assumption to the exports market is crucial for a harmful terms of trade effect of devaluation, which becomes relevant once we move beyond the small country assumption. In other words, the superiority of protection vis-a-vis devaluation is reinforced when we consider manufacturing exports, which face downward sloping demand curves for differentiated products (as opposed to the perfectly elastic one for commodities).

The importance of this fix price supply and elastic demand assumption when applied to the export sector, is emphasized in the disequilibrium analysis of import substitution in a two-sector M-X (imported-exportable) fix price model (Cuddington 1981. Cuddington et al 1984). The negative impact of the imports liberalization (i.e. a reduction in the expenditure on M previously shifted towards X by the binding of the quota) comes into operation only if unemployment is of the Keynesian type,

i.e. when firms in the X sector face a sales constraint 41/. Although producers of the import competing good always face excess demand at the price implied by quantitative controls, the impact of a relaxation of import quotas (and of a devaluation) depends on whether the economy is suffering from Keynesian or Classical unemployment. Production of X falls as a result of the decline in domestic demand brought about by the reversion of the substitution effect of the import restriction only in the former case 42/. It must be noted however that this extension to the export market of the Keynesian argument is carried out at the expense of assuming that the domestic market can not be a significant source of demand expansion 43/.

3.1.2.2.2. The impact of import controls and the import function.

The impact of import controls upon production 44/ operates both at a macro and at a sectoral level, the former case referring to a shift of the expenditure function due to the effects of the forced imports substitution 45/. To illustrate the macro effect we consider jointly demand for imports and demand for domestic production in the simplest case of complete substitution with no price effect 46/. Similarly to previous section $M=h+iY$, with $h=h^*-qc$, demand for domestic production is $DD=b+cY$, with $b=b^*+qc$ representing the symmetric effect upon this demand, i.e. an autonomous shift in its function in the opposite direction to that of the import function. The effect of import controls upon the partition of demand between domestic supply and imports in this simple case is illustrated in Figure 3.1.8., where total demand is $d=dd+m=\alpha+\beta y$, with $\alpha=b+h=b^*+h^*$ and $\beta=c+i$. More generally, if we include the relative price of imports (prm), domestic demand for domestic production is

$$q = dddp\ (\ y,\ prm,\ QC\ ) \qquad [3.1.27.]$$

as opposed to total domestic demand (i.e. including that for foreign production) given by $q = dd\ (y)$; the contractionary effect of a reduction in import controls ($dddp_{QC}$) being modified

by the effect of the movement in relative prices ($dddp_{prm}$) 47/.

We adopt the following specification for import function 48/:

$$m = a + b\,y + c\,prm + d\,IQC \qquad [3.1.28.]$$

Where:

m : Real imports
prm : Relative price to imports
IQC : Index of quantitative controls.

Strictly speaking we ought to estimate a two regimes model, i.e one equation for the equilibrium situation and one for the disequilibrium situation resulting from quantitative controls. However difficulties in identifying at a disagregate level the periods during which each regime is operating, and the level of aggregation at which we are working, lead us to estimate a reduced form including the two situations of equilibrium and disequilibrium. Assuming the country faces a perfectly elastic supply, the volume of imports depends on internal demand (determined by national income and relative prices of imports), and quantitative restrictions.

3.1.2.2. The deterioration of exports performance

Which factors are included within the determinants of manufacturing exports depend on whether or not we assume a perfectly elastic external demand: in the former case the volume of exports is determined by relative prices of supply and an index of the excess supply in the domestic market; in the latter case demand determinants (i.e. relative prices of demand and a variable for the income effect of the buyers) must be added 49/. In the supply model (with infinitely elastic supply), the inclusion of the excess supply index reflects the idea that the producer tends to export the surplus production which he is unable to sell in the domestic market 50/. Thus, the exports

supply of an oligopolist in the domestic market is a function of the following variables: the price set for the domestic market (which expresses both the determinants of the markup and unit cost conditions), the domestic demand conditions, the external price, and the minimum markup he is willing to accept in the foreign market.

Let us consider the interaction of conditions in export and domestic markets 51/ which give rise to the introduction of domestic excess supply, relative prices of supply and the magnitude of the foreign market, in the exports function. We visualize the situation of demand determined level of output and price fixed above the marginal cost level in the domestic market in figure 3.1.9, as the relevant one instead of the decreasing returns of figure 3.1.7. proposed by Cuddington. Thus, in Figure 3.1.9.: p_d^x is the domestic price in foreign currency (p_d/E); p_x^x is the price in the export market, determined by the position and the slope of the foreign demand curve (D_x) relative to the supply one (S_x), i.e. by the magnitude of the world market (Y^w), and competitors' price (p^w); given these foreign markets and domestic demand (D_d) conditions, excess supply for export is given by X_d. The firm will accept a lower markup in the foreign market if it allows an increment in capacity utilization which more than compensates for the effect of the fall in the margin on profitability, i.e. if $du/u > |d\mu/\mu|$; given, of course, that the same reduction in the markup does not pay in the domestic market, because it implies pushing the level of production beyond the profit maximizing level of output as determined by the elasticity of domestic demand 52/. Figure 3.1.10 illustrates the case where the above considered relative unit cost effect is compounded by a reduction in the magnitude of the export market as a result of a fall in Y^w 53/.

For the specification of the export function we introduce a reduced form including from the demand side an index of the magnitude of the buyers market 54/. Thus we have:

$$x = a + b\ pxx/pdx + c\ DES + d\ wt \qquad [3.1.29.]$$

Where:

x: Real exports

pxx/pdx: Relative price of exports to domestic prices.

DES: Excess supply index (=DS/K, with DS: Domestic sales).

wt: Index of world trade.

3.2. DEMAND CONDITIONS

We now introduce the structure of the following analysis in terms of the deterioration of domestic demand, import substitution and exports expansion

3.2.1. INTRODUCTION

This analysis of the deterioration of demand conditions focuses on the stagnation of domestic demand, the expansion of imports and the export crisis. After pointing to domestic demand as the main source of growth for manufacturing, section 3.2.2. stresses the inability of domestic demand to compensate for the demand effect of import expansion and export crisis. Section 3.3. focuses on factors in the evolution of the level and the distribution of income and relative prices and output composition, which gave rise to the stagnation of domestic demand. Finally, section 3.4. concentrates on the causes and consequences of import expansion and export crisis.

Some of the factors considered in the last two sections are specific to each problem. Section 3.3. emphasizes the conjunctural deterioration of industrial workers earnings which compounded the structural conditions of inequality in income distribution Section 3.4. considers the deterioration of

competitiveness vis-a-vis foreign production due to productivity stagnation which combined with the crisis in international markets to generate the exports crisis. Some of these factors are linked to aspects of the Dutch Disease syndrome which afflicted Colombian manufacturing in the second half of the seventies. In particular, section 3.3. emphasizes the adjustments in income distribution (and output composition) resulting from the coffee boom; section 3.4 considers the effect of both the liberalization of imports and the exchange rate revaluation 55/.

3.2.2. COMPONENTS OF DEMAND AND SOURCES OF GROWTH

We approach the quantification of the contribution of domestic demand (DD), import substitution (IS) and export expansion (EX) by means of an exercise which attributes the growth of P to each of these sources of demand growth. The results of the application of the method introduced by Chenery (1960) 56/ for the manufactured aggregate and for the sub-aggregates of light consumption (LC), durable consumption (CD), intermediate goods (IG), and capital goods (KG), are presented in table 3.2-1 57/. We observe the following:

1) DD was the fundamental source of growth in all the subperiods 58/. However, the decrease in its dynamic contribution after 1974 expresses its inability to compensate for the deterioration in the dynamic contributions of IS and EX. The contractionary effect is particularly strong in IG (which suffered the greatest fall in the dynamic contribution of DD), while the dynamism of CD and BK becomes more dependent on DD as a source of growth 59/.

2) The dynamic contribution of IS decreases throughout the period for the aggregate as well as for IG. The fact that the fall in IS took place for CD and KG from 1967-74 to 1974-82 60/ shows, first, the importance that substitution deepening had in the development of these sectors during the period of export

TABLE 3.2-1
SOURCES OF GROWTH

Period	P1 3/	dP4/	A. 1/ Contribution to growth CGDD (%)	CGSI (%)	CGX (%)	Rate of growth	B. 2/ Dynamic contribution DCDD	DCSI	DCX
Manufacturing aggregate									
1958-67	25579	20142	0.7458	0.2079	0.0388	6.32	4.711	1.313	0.245
1967-74	45722	32544	0.9043	-0.0358	0.1228	7.67	6.935	-0.275	0.941
1974-82	78266	26677	1.2177	-0.2548	0.0545	4.70	5.719	-1.197	0.256
1982-87	104943	32763	0.6823	0.2705	0.0619	4.70	3.203	1.270	0.291
Light consumption: LC									
1958-67	14082	6839	0.8981	0.0544	0.0482	4.33	3.889	0.236	0.209
1967-74	20921	8870	0.9015	-0.0489	0.1427	5.10	4.600	-0.249	0.728
1974-82	29791	13081	0.9739	-0.0862	0.1084	4.85	4.721	-0.418	0.526
1982-87	42872	8771	0.8143	0.1716	0.0292	3.71	3.024	0.637	0.108
Consumer durables: CD									
1958-67	939	1711	0.7797	0.2328	-0.0043	11.68	9.104	2.718	-0.050
1967-74	2650	3913	0.7610	0.1157	0.0981	11.45	8.712	1.325	1.124
1974-82	6563	2306	1.6743	-0.7329	0.0754	5.92	9.918	-4.341	0.447
1982-87	8869	7299	0.6119	0.4016	-0.0123	10.00	6.116	4.014	-0.123
Intermediate goods: IG									
1958-67	8442	8736	0.6674	0.3042	0.0355	7.47	4.986	2.273	0.265
1967-74	17178	12147	1.0004	-0.1407	0.1372	8.12	8.119	-1.142	1.113
1974-82	29325	6455	1.2192	-0.1312	-0.0467	3.72	4.535	-0.488	-0.174
1982-87	35780	10216	0.7162	0.1087	0.1791	4.32	3.097	0.470	0.774
Capital goods: KG									
1958-67	2116	2856	0.4879	0.5043	0.0524	9.51	4.642	4.798	0.498
1967-74	4972	7614	0.6577	0.2438	0.0891	12.64	8.312	3.081	1.127
1974-82	12586	4835	1.5325	-0.5584	0.0338	5.84	8.944	-3.259	0.198
1982-87	17422	6476	0.4794	0.4965	0.0050	5.48	2.627	2.721	0.027

1/ Contribution to growth
CGDD: domestic demand
CGSI: import sustitution
CGI: exports
2/ Dynamic contribution
DCDD: domestic demand
DCSI: import sustitution
DCX: exports
3/ Initial level of real production(aggregate)
4/ Production increase

SOURCE: Author's calculation.

FEDESARROLLO
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expansion, and second, the way in which IS reversal was concentrated in these subaggregates.

3) The dynamic contribution of EX decreased from 1967-74 to 1974-82, after increasing from 1958-67 to 1967-74 for the aggregate as well as for IG. The weakness of EX as a source of growth is shown by two facts: first, its dynamic contribution in the X boom period does not reach magnitudes either comparable with those of DD or significantly superior to those reached by IS in the preceding period; second, EX dynamic contribution collapsed in the following period.

3.3. THE STAGNATION OF DOMESTIC DEMAND FOR MANUFACTURING PRODUCTION.

After the first section introduces various elements of our argument on the stagnation of domestic demand, the following sections concentrate on each of these elements: the second section on the distribution of income, the third on the Dutch disease syndrome and the Agriculture-Industry relationship, and the fourth on economic policy. Finally, the fifth section presents the results of the econometric relationships concerning domestic demand for domestic manufacturing production.

3.3.1. INTRODUCTION

The following argument shows how conjunctural elements combined with structural conditions in order to bring about stagnation in the growth of domestic demand for domestic manufacturing production. We consider this combination in terms of three factors: movements in the level and distribution of income, changes in the composition of output, and changes in the source of supply from imports to domestic production (import substitution). With regard to structural conditions, the following play a role in the stagnation of growth of domestic

demand: the perpetual inequality in the distribution of income, as well as the exhaustions in the growth of the output share of manufacturing vis-a-vis agriculture and in the import substitution process. The analysis of the second section is carried out against the background of that perpetual inequality, and the analysis of the third section is undertaken in the context of these exhaustions. However, the discussion which follows will not elaborate on these structural conditions, which have been widely discussed in the Latin American structuralist literature (see Chica 1980). Instead our analysis focuses on the conjunctural elements which came into operation on top of those structural conditions.

The analysis of the impact of the distribution of income emphasizes the deterioration of industrial labour income, in favour of groups with lower propensities to consume industrial goods. The deterioration of industrial workers' earnings is discussed in the second section, and the shift of income in favour of agriculture is considered in the third section on the Dutch disease syndrome and the manufacturing-agriculture relation 61/. As for the movements in the level of income, the restriction imposed on the growth of income by the stabilization policy implemented in the face of the coffee income boom is discussed in the fourth section on the economic policy of the period 62/. It is important to emphasize here the influence of the evolution of aggregate income on the demand for manufacturing output. Indeed, it is apparent that the slow growth tendency of the industrial sector since 1974 replicates, although in a more critical way, the slow growth of the economy as a whole, due to the crisis of 1975-76 and 1981-82.

With regard to the reversal of the import substitution process, we concentrate on the corresponding increased inflow of manufactured imports in section 3.4.1. It is important to point out the relevance of the structuralist analysis of the exhaustion of the import substitution process in this connection. Indeed, as it is the case with the analysis of the narrowness of the

internal market arising from the inequality in the distribution of income, this analysis maintains considerable explanatory power concerning the stagnation of the seventies 63/.

3.3.2. DISTRIBUTION OF INCOME

To highlight the role of income distribution we stress: first, the structural condition of extreme inequality in the distribution of income was not substantially modified during the considered period; second, changes in distribution were not favourable to demand for manufacturing production. The structural condition of inequality has been illustrated by referring to the high Gini coefficient (see Table A.3.4-2) (Urrutia, Berry,1985 - Ranis,1980 - Urrutia,1984 - Reyes, 1986) compared with other countries. The improvement in the distribution of income from the sixties to the late seventies was due to the combination of an increase in the income of poorer groups (crop workers and construction workers) with a relative deterioration in the income of industrial worker's and middle urban groups (Urrutia 1984) 64/. Modifications in income distribution during the seventies included two different processes. First, the real wage of industrial workers deteriorated in the face of increasing profit margins after 1972. Secondly, in connection with the coffee boom from 1976 to 80, a sectoral shift favoured agriculture vis-a-vis manufacturing, and a social group shift favoured crop collectors and land owners vis-a-vis urban middle classes. Due to the expenditure pattern of the groups affected, those redistributive processes did not alleviate the effect of concentration on the narrowness of the market for manufactured goods. On the contrary, while the shift to the lower income groups implied an increase in the propensity to consume food vis-a-vis manufactures, the shift in favour of higher income groups meant an increase in the propensities both to save and to import.

TABLE 3.3-1
SHARE OF LABOR IN TOTAL
INCOME AND BY SECTOR

YEARS	TOTAL	URBAN	RURAL	INDUSTRY
1958	35.58%	39.24%	29.84%	34.26%
1959	35.54%	38.75%	30.43%	34.46%
1960	36.25%	38.88%	31.78%	34.36%
1961	37.02%	39.56%	32.53%	35.65%
1962	38.10%	40.15%	34.33%	35.80%
1963	38.46%	39.75%	36.02%	36.03%
1964	36.96%	39.66%	31.83%	37.57%
1965	38.08%	39.74%	34.80%	37.51%
1966	37.87%	40.03%	33.42%	37.29%
1967	38.82%	41.22%	33.87%	38.38%
1968	37.77%	41.02%	31.02%	39.57%
1969	38.76%	41.99%	31.93%	39.29%
1970	38.37%	41.77%	30.87%	41.23%
1971	38.49%	41.40%	31.47%	41.64%
1972	37.31%	41.08%	28.12%	39.62%
1973	36.57%	40.54%	26.23%	34.92%
1974	36.86%	40.13%	28.07%	31.97%
1975	37.52%	41.39%	27.57%	33.96%
1976	35.95%	40.12%	24.89%	35.40%
1977	36.61%	40.03%	27.36%	36.32%
1978	37.77%	40.35%	30.89%	42.24%
1979	37.71%	39.95%	31.77%	42.11%
1980	38.02%	39.42%	34.15%	36.95%

SOURCE: Author's calculations based on DANE
National Accounts.

TABLE 3.3-2

DISTRIBUTION OF THE COFFEE BOOM (PERCENTAGES)

	TOTAL* INCOME	GOVERNMENT	PRODUCERS	PRIVATE EXPORTERS	FEDERATION
1975	1486.60	0.60	163.40	-52.05	-12.00
1976	13081.60	7.66	49.76	3.47	39.10
1977	23283.70	8.23	44.87	18.12	28.80
1978	10108.60	7.51	57.26	15.27	19.90
1979	17836.60	5.91	43.04	1.51	49.50
TOTAL	65797.10	7.37	48.16	10.52	33.95

* MILLONS OF PESOS OF 1974
SOURCE: LEIVOBICH (1984)

TABLE 3.3-3

	RELATIVE PRICES AGRICULTURE-INDUSTRY		RATE OF INFLATION (PERCENTAGES)			
	ASC/I (1)	ACC/I (2)	P.PROD (3)	IPC (4)	IPA (5)	P.I.C (6)
1970	100.0	100.0	9.4		4.5	
1971	106.9	110.6	10.7	9.0	16.1	-4.4
1972	109.2	113.6	14.5	13.4	16.1	20.6
1973	133.9	131.2	15.5	20.8	31.0	29.0
1974	118.9	114.7	37.0	24.3	30.5	13.9
1975	122.7	117.9	26.8	22.9	19.5	23.6
1976	119.6	128.7	21.4	20.1	27.9	119.8
1977	178.2	146.3	20.8	33.1	34.7	27.2
1978	115.7	121.0	16.9	17.8	13.0	1.6
1979	112.6	112.2	27.1	24.7	32.0	-5.2
1980	111.6	111.4	28.0	26.5	25.8	17.9
1981	105.1	98.7	27.0	27.5	28.5	9.1
1982			22.0	24.5	24.4	18.2

(1) ASC/I:Agriculture without coffee/Indu.
(2) ACC/I: Agriculture with coffee/Indu.
SOURCE: COYUNTURA 1982. Taken from ARAMBURO-OTOYA.
(3) P.PROD.: Industrial Productor Prices without coffee.
(4) IPC: Index of consumer prices, total, annual average.
(5) IPA: Index of consumer prices, foods, accumulated to December.
(6) P.I.C.: Internal price of coffee
SOURCES:
(3) DANE National Accounts.
(4) Cuddington John. ENSAYOS SOBRE POLITICA ECONOMICA NO. 10.
(5) DANE
(6) Una Nota Metodologica sobre las Utilidades de los Exportadores Privados de Cafe Colombiano.Lanzetta, Cristina. Desarrollo y Sociedad No.17-18.

TABLE 3.3-4

RATES OF GROWTH OF GDP

	TOTAL	INDUSTRY	AGRICULTURE	URBAN	RURAL
1958					
1959	7.0	8.3	4.9	7.7	5.9
1960	4.7	6.2	0.1	7.0	0.5
1961	5.6	6.0	4.3	6.8	3.2
1962	5.6	6.9	3.4	6.8	3.1
1963	3.6	4.7	0.5	4.5	1.6
1964	6.2	5.9	5.6	6.3	5.9
1965	3.8	4.7	0.1	5.2	0.8
1966	5.3	6.6	3.4	6.5	2.6
1967	4.2	3.6	5.2	4.0	4.8
1968	6.0	6.2	6.9	6.1	5.8
1969	6.9	7.3	5.2	7.2	6.4
1970	6.7	8.3	2.5	8.6	2.1
1971	6.5	8.5	0.8	8.8	0.5
1972	7.9	10.7	7.8	7.9	7.9
1973	6.8	8.5	2.4	8.4	2.6
1974	5.8	8.3	5.5	7.0	2.5
1975	2.7	1.2	5.8	1.7	5.6
1976	4.5	4.4	3.1	5.1	2.7
1977	3.9	1.4	3.3	4.5	2.3
1978	7.9	10.0	8.1	8.1	7.3
1979	5.1	6.1	4.8	5.3	4.7
1980	4.0	1.2	2.2	4.3	3.0
1981	2.6	-2.6	3.2	2.3	3.3
1982	0.9	-1.4	-1.9	1.8	-1.7
1983					

SECTOR SHARE OF GDP (percentages)

	URBAN	RURAL	INDUSTRY	SERVICES AND OTHERS	GOVERNMEN	MINING	AGRICULTURE
	63.6	34.6	19.4	37.2	7.0	3.1	31.4
	63.9	34.1	19.6	37.7	6.6	3.4	30.7
	65.6	32.9	20.0	38.8	6.8	3.4	29.5
	66.6	32.3	20.1	39.6	6.9	3.0	29.3
	67.5	31.6	20.4	40.2	7.0	2.8	28.7
	68.3	31.0	20.7	40.3	7.3	3.1	27.9
	68.4	31.0	20.6	40.7	7.1	3.1	27.8
	69.5	30.1	20.9	41.4	7.2	3.3	26.9
	70.2	29.3	21.1	42.0	7.1	3.0	26.4
	70.1	29.5	21.0	42.1	7.0	2.9	26.6
	70.1	29.4	21.0	42.2	6.9	2.6	26.8
	70.6	29.4	21.2	42.7	6.8	2.9	26.5
	71.9	28.1	21.5	43.4	6.9	2.7	25.5
	73.4	26.6	21.9	44.2	7.3	2.5	24.1
	73.4	26.6	22.5	43.5	7.4	2.5	24.1
	74.5	25.5	22.8	44.3	7.3	2.4	23.1
	75.3	24.7	23.4	44.8	7.1	1.7	23.0
	74.6	25.4	23.1	44.6	6.9	1.7	23.7
	75.0	25.0	23.0	44.8	7.2	1.6	23.4
	75.4	24.6	22.5	45.5	7.4	1.3	23.2
	75.5	24.5	22.9	45.3	7.3	1.2	23.3
	75.6	24.4	23.1	45.1	7.4	1.1	23.2
	75.9	24.1	22.5	45.5	7.8	1.3	22.8
	75.7	24.3	21.4	46.3	8.1	1.3	23.0
	76.3	23.7	20.9	47.3	8.2	1.3	22.3
	76.1	23.9	20.7	47.1	8.4	1.5	22.4

SOURCE: Calculations based on information of DANE National Accounts.

TABLE 3.3-5

MONETARY STATISTICS

	RESERVES	BASE	MULTIPLICATOR	BASE*MULTIPLICATOR
1970	2812	13488	1.6034	21627
1971	3434	14674	1.6352	23995
1972	7674	18406	1.6213	29842
1973	12228	24132	1.5983	38572
1974	11167	28671	1.6084	46113
1975	16418	37747	1.5608	58915
1976	40804	53426	1.4859	79383
1977	69526	74865	1.3825	103503
1978	99274	101275	1.3319	134890
1979	176664	132044	1.2692	167593
1980	259969	170118	1.2596	214287
1981	309749	207164	1.2536	259709
1982	317967	243758	1.3362	325699

* CURRENT MILLIONS OF PESOS
SOURCE: ARAMBURO,OTOYA

FISCAL STATISTICS
REAL RATES OF GROWTH*
NATIONAL GOVERNMENT

	INCOME TAXES	OTHERS	TOTAL	EXPENDITURES OPERATIONA	INVESTMEN	TOTAL
1973	11.5	72.0	13.2	15.3	-9.8	4.9
1974	4.4	-13.9	3.6	4.8	-6.4	0.7
1975	20.2	-14.8	19.0	10.7	9.2	10.1
1976	6.0	-7.1	5.7	1.7	-22.1	-6.2
1977	-2.1	-14.2	2.4	-2.9	-1.0	-2.3
1978	11.9	43.2	12.5	17.4	9.8	15.3
1979	10.2	-23.1	9.4	16.1	-0.7	11.6
1980	4.5	19.3	4.7	15.3	29.3	18.6
1981	6.0	-0.8	5.9	-0.5	12.9	3.3
1982	0.8	3.7	0.9	10.1	5.2	8.7

1/ INCLUDING PUBLIC DEBT
SOURCE: BANCO DE LA REPUBLICA. EDGAR GUTIERREZ CASTRO. PRESENTACION ANTE EL CONGRESO NACIONAL SOBRE LA EMERGENCIA ECONOMICA EN EL CAMPO FISCAL.

Concerning the deterioration of the income of industrial workers 65/, a short term deterioration of the share of labour in industrial income took place (see Table 3.3-1) as a result of the inertia of wages in the face of accelerated inflation from 1973 onwards 66/. Section 4.2.2. illustrates the contractionary effect on industrial demand in terms of the opposite movements in the profit margin and in capacity utilization (see Table 4.2.1.) 67/.

3.3.3. DUTCH DISEASE AND AGRICULTURE VS MANUFACTURING

The contractionary effects on manufacturing of a primary exports boom considered in section 3.1.3. operated in Colombia as a result of the expansion of coffee exports earnings during the second half of the seventies. This section focuses on the movement of expenditure towards food as a result of the increase in its price; the next concentrates on contractionary monetary and fiscal policies implemented during the period. The erosion of the competitiveness of domestic production vis-a-vis foreign production generated by the decrease in the rate of devaluation is discussed in section 3.4.1.

We now consider the effect of the increase in the income of the coffee sector on food demand which, via the subsequent changes in terms of trade, generate redistributive movements in favour of the rural sector. Two related mechanisms contributed to this deteriorating effect upon the demand for manufactures and the profitability of manufacturing 68/: first, the erosion of the propensity to consume manufactured goods brought about by the distribution of the coffee boom earnings; second, the impact of the adjustments in the food market on the intersectoral relation industry-agriculture. The harmful effect of the distribution of the boom earnings (see Table 3.3-2.) upon the propensity to consume manufactured goods operated via two channels: first, the producers' high participation 69/ brought about a demand shift from industrial to agricultural production 70/; and second, the

increase in the propensity to save required to finance the export surplus was brought about by the high participation of the Coffee Federation (due to the accumulation of income in the National Coffee Fund), and that of exporters, a group with a high propensity to save (Gersovitz, 1982) 71/.

The impact of adjustments in the food market on the relation industry-agriculture was linked to movement in terms of trade (see Table 3.3-3.), and the subsequent relative contraction of the manufacturing sector (see Table 3.3-4.). The pivot of the process was the increase in the price of food resulting from the excess demand pressure caused, on the demand side, by the increase in aggregate demand generated by the extraordinary foreign exchange earnings and the expansion of coffee producers' income 72/. The rise in the prices of food throughout the decade, and particularly in 1977, had the contractionary effect upon manufacturing production considered in various neostructuralist analysis applying the theoretical framework of section 3.1.2. to the Colombian economy 73/. Indeed, as emphasized in the Kaleckian and structuralist conceptions of intersectoral complementarity which underlies those analysis, the bottleneck in food production continues to impose a fundamental restriction on Colombian industrial development.

Finally, the transfer of income from the industrial to the agricultural sector through the movement in terms of trade contributed to reverse the tendency for manufacturing to grow faster than agriculture suggested by the standard pattern of economic development. After growing faster up to 1974, the industrial sector has been contracting in terms of its GDP share ever since.

3.3.4. ECONOMIC POLICY AND DEMAND.

We now concentrate on the impact of the economic policy of the period upon demand for manufactures. To consider the implications of the management of the boom during the Lopez government (1974-

78) in its context, two issues must be taken into consideration. First, this government inaugurated the implementation of neoliberal policies (designed to remove the protectionist instruments of the previous industrial development policy) which were carried further by the subsequent Turbay government (1978-82). Secondly, the fact that the most severe crisis suffered by the colombian industry since the post war period took place in the course of a foreign exchange boom (which eliminated the often blamed external gap) points to the contribution of economic policy to this crisis 74/.

Various short-term elements of the policy implemented by the Lopez government compounded its long-term neoliberal policy, and combined with other Dutch disease effects to erode the demand conditions of the manufacturing sector. Adjustment to the surplus was determined by economic policy choices with contractionary consequences for manufacturing, the rise in the internal price of coffee and the complementary instruments required being more inflationary and less expansionary than alternative selective policies 75/. Three elements of this adjustment process impaired domestic demand conditions 76/ of manufacturing: first, the increase in the price of food implied by the increase in the internal price of coffee (see Table 3.3-3) 77/; second, the restrictive monetary policy, which reduced the credit liquidity enjoyed by the sector 78/; third, the policy of fiscal restriction with its emphasis on public investment adjustment 79/.

Finally, two elements of the policy implemented by the Turbay government (1978-82), contributed to the stagnation of manufacturing. First, the neoliberal strategy of the development plan, which implied the liberalization of imports the impact of which is considered in section 3.4.2.; secondly, a macroeconomic policy restricting public expenditure to infrastructure and giving priority to monetary control 80/. As a result of this restrictive monetary policy and of the greater leakages implied

by import liberalization the 1981-82 recession deepened into the financial bankruptcy mentioned in section 2.3.

3.3.5. ECONOMETRIC RELATIONS

We now present the results of the estimations concerning domestic demand for domestic production of manufacturing goods.

3.3.5.1. Introduction

The hypotheses underlying the analysis of domestic demand are either of a general or of a specific type. General hypothesis, are the influence of income, relative prices, foreign competition, and liquidity or wealth factors, some of them associated with the stagnation of domestic demand for manufacturing. Specific hypothesis refer to more specific mechanisms at work in the deterioration of the diverse components of domestic demand, e.g.: the influence of the distribution of income and the price relative to food on the demand for consumption goods; a more important influence of foreign competition through quantitative controls than that via prices relative to imports; the influence of long-term credit upon demand for KG; the opposite influences of the contraction of the fiscal stance and money supply versus the expansion of coffee exports.

The following three sections contain a detailed presentation of the results for consumption goods, production goods, and the whole of manufactured output. Both in the estimations on consumption and on the whole of manufactured output we add to the traditional methods of estimation experiments using the cointegration methodology. We now note some general results, while a final conclusion recapitulates the results concerning mechanisms more specificly related to the stagnation of domestic demand. In general, the influence of income exceeds that of

domestic relative prices, and the importance of these prices surpasses that of the foreign competition variables; as for these, while import controls occasionally is significant, relative prices is never so. The influence of the lagged dependent variable is stronger for CD and KG revealing a dynamic structure in accordance with the stock nature of these goods. Financial assets are not statistically significant in the former case, while long term credit has a clear influence in the latter one. In the case of total manufacturing financial assets are not significant either, but means of payment are so.

3.3.5.2. Domestic demand for consumption goods.

3.3.5.2.1. Light Consumption goods. In Table 3.3.6-A we observe: 1) The influence of the income variables exceeds that of domestic relative prices, and the importance of these prices surpasses that of relative prices of imports and import controls (regressions 1 and 2). 2) Concentrating on the distributive variables workers earnings are not statistically significant, while the share of profits has a negative influence 81/ in accordance with the underconsumist hypothesis in the urban case (regressions 5 to 8). 3) As for the foreign competition variables, neither import controls nor the relative price of imports are statistically significant. 4) Domestic prices relative to the food consumer index have a strong influence the sign of which is at odds with the income effect of the neostructuralist analysis; domestic prices relative to the aggregate consumer index are not statistically significant (regressions 1 to 3) 82/. 5) As for income variables, disposable income has the expected strong influence (regressions 1 to 4).

Shifting now to the CI methodology, we extend the utilization of the EG2S from its original application to the consumption function (Engle & Granger, 1987), to two exercises in demand

analysis: the first concerns domestic demand for LC, and the second domestic demand for total manufacturing production. In the first exercise we introduce the income and relative price terms in the CR, and the relative price to food in the ECM equation. If we carry out the CR with the domestic demand for domestic production (QDLC stands for production less exports of LC) first against real disposable income (yd), second adding either the domestic relative prices (prclc) or the relative price to food (pralc), and thirdly including the relative prices of imports (prmlc) we have:

lQDLC = -0.2750 + 0.8810 lyd
R^2= 0.9773 CRDW = 0.8025 DF = -1.5003 ADF = 0.3466

lQDLC = 2.3010 + 0.9061 lyd - 0.6204 prclc
R^2= 0.9822 CRDW = 1.1201 DF = -2.6974 ADF = -0.8101

lQDLC = 2.5010 + 0.8768 lyd - 0.4468 lprclc - 0.1436 lprmlc
R^2= 0.9840 CRDW = 1.1488 DF = -2.6092 ADF = -1.6169

lQDLC = 6.7052 + 0.6486 lyd - 0.9397 lpralc
R^2= 0.9873 CRDW = 1.9604 DF = -4.9350 ADF = -2.1559

lQDLC = 6.3753 + 0.6650 lyd + 0.8156 lpralc - 0.0923 lprm
R^2= 0.9880 CRDW = 1.7644 DF = -4.3894 ADF = -2:6183

These results show two things: first, whereas the improvement in the statistics brought about by the introduction of pralc is important enough to make possible to reject the non CI hypothesis, the improvement resulting from the introduction of prclc is not; second, adding prmlc either on its own or additionally to the two other domestic relative prices does not bring about such an improvement. For the ECM equation we present

TABLE 3.3-6-A
DOMESTIC DEMAND FOR LIGHT CONSUMPTION

#	VD	R-BAR	DW	RSS	AC	CONST	LYD	IQC	LIQC1	LPRCLC	LEU	LET	LMU	LMT	LPRMLC	LPRALC	LQDLC(-1)
1	LQDLC	0.9865	1.72	0.04		0.462	0.618			-0.209							0.329
						(0.492)	(3.916)			(-0.956)					-0.095		(1.449)
2	LQDLC	0.9849	1.99	0.04		1.084	0.431	-0.000		-0.307					(-0.171)		0.533
						(1.049)	(2.342)	(-0.152)		(-1.382)							(2.591)
3	LQDLC	0.9887	1.97	0.04		6.494	0.668	0.001		0.003							
						(4.431)	(9.971)	(0.364)		(0.014)						-0.947	
4	LQDLC	0.9842	1.99	0.04		1.055	0.432	-0.000		-0.310						(-3.456)	
						(0.529)	(2.218)	(-0.131)		(-1.916)			0.008				0.533
5	LQDLC	0.9828	2.27	0.05		1.646		-0.000		-0.229			(0.017)				(2.530)
						(1.163)		(-0.356)		(-0.923)	0.196						0.740
6	LQDLC	0.9828	2.20	0.05		0.855		-0.000		-0.078	(1.451)						(3.984)
						(0.769)		(-0.161)		(-0.357)		0.270					0.665
7	LQDLC	0.9648	1.84	0.32	X	24.906		-0.005		2.753		(1.487)					(2.845)
						(11.151)		(-5.002)		(6.663)			-6.891				
8	LQDLC	0.9850	2.15	0.04	X	-2.144		-0.000		-0.326			(-15.764)				
						(-1.501)		(-0.560)		(-1.235)				0.664			1.100
														(1.512)			(17.532)

TABLE 3.3-6-B
DOMESTIC DEMAND FOR CONSUMER DURABLES

#	VD	R-BAR	DW	RSS	AC	CONST	LPRCCD	LYD	IQC	LIQC1	LPRMCD	LEU	LET	LMU	LMT	LE	LFA	LQDCD(-1)
1	LQDCD	0.9867	1.53	0.14		-5.913	-0.013	0.868	0.0097									0.487
						(-2.034)	(-0.039)	(3.101)	(0.922)									(3.284)
2	LQDCD	0.9865	1.59	0.14		-7.996	-0.140	0.902	0.001					0.566				0.486
						(-2.065)	(-0.383)	(3.166)	(1.176)					(0.822)				(3.254)
3	LQDCD	0.9864	1.61	0.14		-7.404	-0.181	0.670	0.001						0.529			0.497
						(-2.111)	(-0.457)	(3.081)	(0.880)						(0.776)			(3.307)
4	LQDCD	0.9883	1.97	0.14	X	-15.901	0.065	1.840			0.080			0.531				
						(-3.546)	(0.174)	(14.099)			(0.420)			(0.685)				
5	LQDCD	0.9884	2.05	0.14	X	-10.204	0.032	1.738			0.071				-0.548			
						(-1.863)	(0.085)	(10.918)			(0.371)				(-0.723)			
6	LQDCD	0.9850	2.02	0.18	X	-13.785	0.170		-0.0011							1.838		
						(-4.339)	(0.391)		(-1.094)							(14.148)		
7	LQDCD	0.9875	1.92	0.15	X	-7.078	0.018		-0.00057			1.431						
						(-2.862)	(0.046)		(-0.629)			(16.978)						
8	LQDCD	0.9849	2.05	0.18	X	-8.352	-0.040		-0.00108				1.542					
						(-2.831)	(-0.092)		(-1.026)				(13.301)					
9	LQDCD	0.9886	1.99	0.14	X	-13.879	0.141	1.618	-0.00035									
						(-4.905)	(0.373)	(14.920)	(-0.367)									
10	LQDCD	0.9887	1.97	0.14	X	-13.587	0.106	1.608		-0.00519								
						(-4.869)	(0.291)	(15.173)		(-0.427)								

LQDLC: LOG OF THE DOMESTIC DEMAND FOR LIGHT CONSUMPTION
LYD: LOG OF DISPOSABLE INCOME
IQC: INDEX QUANTITATIVE CONTROLS LEVEL
LIQC1: LOG INDEX QUANTITATIVE CONTROLS
LPRCLC: LOG PRICE RELATIVE TO PRODUCER INDEX
LEU: LOG URBAN EARNINGS
LET: LOG TOTAL EARNINGS
LMU: LOG URBAN PROFITS
LMT: LOG TOTAL PROFITS
LPRMLC: LOG RELATIVE PRICES OF IMPORTS OF LIGHT CONSUMPTION
= IMPORTS PRICE INDEX/ WHOLESALE PRICE INDEX FOR PRODUCED AND CONSUMED GOODS
LPRALC: LOG PRICE RELATIVE TO INDEX OF CONSUMPTION PRICES FOOD GROUP FOR LIGHT CONSUMPTION
LQDLC(-1): LOG DOMESTIC DEMAND FOR LIGHT CONSUMPTION LAGGED ONE PERIOD

LQDCD: LOG DOMESTIC DEMAND FOR CONSUMER DURABLES
LPRCCD: LOG CONSUMER PRICE INDEX FOR CONCUMER DURABLES
LE: LOG EXPENDITURES
LFA: LOG FINANCIAL ASSETS
LQDCD(-1): LOG DOMESTIC DEMAND FOR CONSUMER DURABLES LAGGED ONE PERIOD

TABLE 3.3.7-A
DOMESTIC DEMAND FOR INTERMEDIATE GOODS

#	VD	R-BAR	DW	RSS	AC	CONST	LPRPIG	LIG	IGC	LPRMIG	LTCR	LGDP	LATCR	LPRIDIG	LGDP(-1)	LGDIG(-1)
1	LGDIG	0.9900	2.18	0.04		0.394	-0.00377	0.367	-0.0065		0.44					0.561
						(.476)	(-0.023)	(1.922)	(-1.226)		(1.095)					(3.358)
2	LGDIG	0.9893	2.22	0.04	X	-0.017	0.045	0.382		0.00627	0.025					0.580
						(-0.013)	(0.265)	(2.045)		(0.086)	(.582)					(3.420)
3	LGDIG	0.9902	2.19	0.04	X	-2.722						0.599		0.218		0.463
						(-1.668)			0.00003			(2.381)		(1.166)		(2.347)
4	LGDIG	0.9916	2.12	0.04	X	-2.917			(0.0513)	0.211		1.090		-0.0083		
						(-2.089)				(2.204)		(20.861)		(-0.044)		
5	LGDIG	0.9891	1.56	0.04		-5.514			0.00061			0.673	0.068	0.248		0.377
						(-1.970)			(0.869)			(2.942)	(1.085)	(1.158)		(1.874)
6	LGDIG	0.9927	2.23	0.03	X	-4.171			0.000002		0.119	1.10661		0.2618		
						(-1.502)			(0.0056)		(3.7682)	(22.1593)		1.6358		

TABLE 3.3.7-B
DOMESTIC DEMAND FOR CAPITAL GOODS

#	VD	R-BAR	DW	RSS	AC	CONST	IGC	LIGC1	LGDP	LPRIPRG	LIG	LPRPKG	LLCR	LPRMKG	LGDKG(-1)
1	LGDKG	0.9893	1.67	0.10		-1.708	-0.00062				0.486	0.028			0.661
						(-0.754)	(-0.644)				(2.485)	(0.073)			(5.082)
2	LGDKG	0.9891	1.69	0.10		-0.726					0.424	-0.118			0.672
						(-0.304)					(1.767)	(-0.355)			(4.884)
3	LGDKG	0.9907	1.58	0.08		-1.410	-0.0013				0.405	-0.020		0.026	0.631
						(-0.665)	(-1.354)				(2.358)	(-0.055)	0.100	(0.202)	(5.017)
4	LGDKG	0.9889	1.89	0.11	X	-1.359	-0.0015				1.285	-0.758	(2.076)		
						(-0.524)	(-1.738)				(10.220)	(-1.943)	0.095		
5	LGDKG	0.9939	1.58	0.09		-0.269		-0.00217			0.401	-0.241	(1.305)		
						(-0.128)		(-0.160)			(2.076)	(-0.694)	0.080		
6	LGDKG	0.9891	2.02	0.11	X	-2.698		-0.023			1.362	-0.547	(1.634)		0.638
						(-1.141)		(-1.926)			(12.693)	(-1.550)	0.042		(4.892)
7	LGDKG	0.9896	1.67	0.10		-0.991					0.453	-0.107	(1.615)		
						(-0.509)					(2.411)	(-0.354)			
8	LGDKG	0.9940	1.60	0.05		-0.465		0.0052	0.875	-0.204					0.663
						(-2.201)		(0.517)	(5.617)	(-1.497)					(5.171)
															0.354
															(2.614)

LGDIG: Log of domestic demand for intermediate goods (IG)
LPRPIG: Log of intermediate goods (IG) price relative to producer price for IG
LIG: Log of industrial production
IGC: Imports quantitative control index
LPRMIG: Log of intermediate goods (IG) price relative to imports price of IG.
LTCR: Log of total credit for the industry
LGDP: Log of Gross Domesti Product
LATCR: Log of aggregate total credit
LPRIDIG: Log of intermediate goods (IG) price relative to wholesale price for IG
LGDP(-1): Log of Gross Domestic Product lagged one period
LGDIG(-1): Log of domestic demand for intemediate goods lagged one period

LGDKG: Log of domestic demand for capital goods (KG)
IGC: Imports quantitative control index level
LIGC1: Log of imports quantitative control index
LGDP: Log of Gross Domestic Product
LPRIPRG: Log of capital goods (KG) price relative to wholesale price f
LIG: Log of industrial production index
LPRPKG: Log of capital goods(KG) price relative to producer price for
LLCR: Log of long term credit
LPRMKG: Log of capital goods (KG) price relative to imports price of K
LGDKG(-1): Log of domestic demand for capital goods lagged one period

TABLE 3.3-8
DOMESTIC DEMAND FOR MANUFACTURING

#	VD	RSS	CONST	LPRIPT	IQC	LIQC1	LCV	LYD	LPRMT	LATCR	FS	LFS1	LFA	LRM1	LWD(-1)
1	LWD	0.03	1.475	-0.144	0.00103		0.052								0.905
			(1.088)	(-0.532)	(1.375)		(1.317)								(21.351)
2	LWD	0.03	1.057	-0.092		0.0166	0.040								0.924
			(0.976)	(-0.418)		(2.050)	(1.033)								(22.979)
3	LWD	0.04	2.283	-0.359	0.001							0.00025			0.944
			(1.756)	(-1.579)	(1.331)							(0.032)			(29.060)
4	LWD	0.02	0.892	-0.069	0.00045		0.053							0.282	0.677
			(0.733)	(-0.310)	(0.704)		(1.622)							(3.356)	(8.851)
5	LWD	0.03	1.073	0.135	0.0009		0.062						0.109		0.752
			(0.849)	(0.479)	(1.248)		(1.677)						(2.124)		(8.058)
6	LWD	0.03	1.384	-0.115	0.001		0.057			-0.016					0.914
			(0.978)	(-0.397)	(1.331)		(1.312)			(-0.314)					(17.561)
7	LWD	0.02	0.064	0.111	0.00042		0.060						0.074	0.247	0.588
			(0.582)	(0.458)	(0.676)		(1.882)						(1.631)	(2.942)	(6.397)
8	LWD	0.04	0.934	0.048			0.062		0.083						0.875
			(0.767)	(0.221)			(1.507)		(1.097)						(15.309)
9	LWD	0.02	-0.641	-0.169	0.001			0.785							0.283
			(-0.494)	(-0.901)	(1.650)			(3.465)							(1.473)
10	LWD	0.02	-0.710	-0.164	0.001			0.796			-0.0062				0.275
			(-0.466)	(-0.909)	(1.614)			(3.016)			(-0.083)				(1.252)
11	LWD	0.02	-0.064	-0.190	0.00069			0.528						0.166	0.366
			(-0.049)	(-1.046)	(1.090)			(1.969)						(1.645)	(1.906)
12	LWD	0.03	2.432	-0.162	0.0008						0.014		0.118		0.750
			(2.145)	(-0.722)	(1.165)						(1.884)		(2.302)		(8.847)
13	LWD	0.03	2.609	-0.402	0.00098					-0.014	0.011				0.944
			(2.061)	(-1.805)	(1.272)					(-0.273)	(1.302)				(19.011)
14	LWD	0.03	1.336	0.049					-0.036		0.017				0.757
			1.255	(0.289)					(-0.370)		(1.621)				(8.254)

WD — LOG OF DOMESTIC DEMAND FOR MANUFACTURING
PRIPT — LOG OF DOMESTIC DEMAND PRICE RELATIVE TO WHOLE SALE PRICE FOR MANUFACTURING
IQC — IMPORTS QUANTITATIVE CONTROL INDEX
LIQC1 — LOG OF IMPORTS QUANTITATIVE CONTROL INDEX
LCV — LOG OF COFFEE INCOME
LYD — LOG OF DISPOSABLE INCOME
LPRMT — LOG OF DOMESTIC DEMAND FOR MANUTACTURING PRICE RELATIVE TO IMPORTS PRICE FOR MANUFACTURING
LATCR — LOG OF AGGREGATE TOTAL CREDIT
FS — FISCAL STANCE (LEVELS)
LFS1 — LOG OF FISCAL STANCE
LFA — LOG OF FINANCIAL ASSETS
LRM1 — LOG OF REAL M1
LWD(-1) — LOG OF DOMESTIC DEMAND FOR MANUFACTURING (LAGGED ONE PERIOD)

only one of the various cases tested (including one with the share of profits in income additional to the specifications including the usual terms in lagged differences). Thus, with d2lEU standing for the double difference of the log of urban labour earnings (which is I(2): see Table A-3.4-3 for the levels of integration of the variables):

$$\begin{aligned} d1QDLC = {} & 0.0138 + 0.206\,d1QDLC_{-1} + 1.2326\,d1yd - 0.8563\,d1yd_{-1} - 0.522\,d1pralc \\ & (0.4958)\quad (0.6890)\qquad (2.1772)\quad (-1.5636)\qquad (-1.9187) \\ & + 0.5667\,d1pralc_{-1} - 0.1073\,d1prmlc - 0.5663\,d2lEU - 1.2665\,z_{-1} \\ & (1.9899)\qquad\quad (-1.2256)\qquad (-1.5942)\qquad (-2.8343) \end{aligned}$$

These results show a strong influence of both the current change in yd and of previous equilibrium error, as well as a lagged income effect (in accordance with the neoestructuralist argument of a reduction in demand stemming from an increase in the price of food), alongside a current substitution effect. If we substitute domestic demand adding imports for dddqlc as dependent variable we do not obtain any improvement.

3.3.5.2.2. Consumer Durables. Table 3.3-6-B shows: 1) Disposable income and expenditure have a strong influence (regressions 6 to 8) 83/; the lagged dependent variable is statistically significant (pointing to a dynamic structure in accordance with the stock character of these goods: regressions 1 to 3). 2) Domestic relative prices are not significant. 3) As for the income and distributional variables, as opposed to LC while worker's earnings are significant (regressions 6 and 7) the share of profits are not (regressions 2 to 5). 4) The inclusion of financial assets does not bring about any improvement. 5) Neither import controls nor relative prices of imports are statistically significant.

3.3.5.3. Domestic demand for production goods.

3.3.5.3.1. Intermediate Goods. In Table 3.3-7-A we observe: 1)

The influence of aggregate GDP exceeds that of industrial GDP (regressions 1 and 5); none of the relative prices (to the industrial and to the aggregate index) are statistically significant, the income elasticities exceeding by far those for domestic relative prices. 2) As for the foreign competition variables, neither the relative price of imports nor import controls are statistically significant (with the correct sign: the former is significant with the wrong sign in the aggregate case: regression 4). 3) The credit variable is significant (with the correct sign) only for the industrial case (regression 5). 4) The lagged dependent variable is statistically significant both for the industrial case and for the aggregate (although it has a weaker influence here than it has upon demand for CD and for KG).

3.3.5.3.2. Capital Goods. Table 3.3.7-B shows: 1) For both the aggregate (regression 8) and for the industrial case (regressions 1 to 7), the influence of income exceeds that of relative prices. The influence of aggregate GDP exceeds that of industrial GDP and relative prices are statistically significant only for the industrial case (regression 4). 2) Neither import controls nor the relative price of imports are statistically significant. 3) The lagged dependent variable and long term credit (regression 3) are statistically significant.

3.3.5.4. Domestic demand for total manufacturing production. In Table 3.3-8 we observe: 1) For foreign competition, only import controls are statistically significant (regression 2). 2) With regard to exogenous income, coffee exports has a stronger influence than the index of fiscal stance (although neither is consistently significant: regressions 1 to 8. 3) The lagged dependent variable substitutes for disposable income (regressions 9 to 11); this points to the recurrent dynamic specification problem involving the income variables. 4) Disposable income (as opposed to coffee income) has a stronger influence than M1

(regression 11) and domestic relative prices (which are not statistically significant).

Shifting now to the CI methodology we introduce income (RGNY standing for real gross national income) and domestic relative price (prpt) terms in the CR, adding the terms for foreign competition (IQC for index of quantitative controls along with prmt for relative price of imports) in the ECM. The following result allows us to reject the non CI hypothesis:

$$lQD = -4.9978 + 1.2257\ lRGNY + 0.3282\ lpript$$
$$R^2 = 0.9962 \quad CRDW = 1.3700 \quad DF = -3.7338 \quad ADF = -5.6274$$

For the ECM equation we have

$$dlQD = -0.0023 + 0.463\,dlQD_{-1} + 1.97\,dlRGNY - 0.661\,dlRGNY_{-1} + 0.3278\,dlpript$$
$$(-0.0538) \quad (1.8796) \quad (5.8858) \quad (-1.8820) \quad (1.4648)$$
$$-0.0265\,prmt - 1.2628\,z_{-1}$$
$$(-0.5005) \quad (-3.6907)$$
$$R^2 = 0.7115 \qquad DW = 2.4800$$

$$dlQD = -0.0235 + 0.49\,dLQD_{-1} + 1.975\,dlRGNY - 0.75\,dlRGNY_{-1} + 0.3622\,dlpript$$
$$(-1.3447) \quad (1.9777) \quad (5.3641) \quad (-2.3654) \quad (1.5161)$$
$$-0.00057IQC - 1.2392z\text{-}1$$
$$(-0.2111) \quad (-3.6358)$$
$$R^2 = 0.7084 \qquad DW = 2.5201$$

These results show the strong influence of both the lagged changes in the dependent variable and of current changes in RGNY, as well as of the previous disequilibrium. The influence of foreign competition variables is not statistically significant. We obtain no improvement, substituting domestic demand adding imports for dlqd as dependent variable.

3.3.5.5. Conclusion. Results related to general hypotheses about the stagnation of domestic demand for manufactures are the following: 1) The expected positive influence of income points to the effect of a deceleration in its growth. It is interesting in this sense to note the more important influence of aggregate GDP than industrial GDP upon the demand for production goods. 2) Although quantitative controls have the expected positive influence for the aggregate (and KG), the foreign competition variables (i.e. including also relative price to imports) do not support consistently a strong competitive effect. 3) The expected positive influence of money and credit points to the effect of constraints upon their availabilities. Results related to the more specific hypotheses are the following: 1) The demand for LC is harmed by an increase in the share of profits in urban income in accordance with the underconsumist hypothesis. 2) The results concerning the neostructurtalist income effect are not so clear. It is interesting that the relative prices to food are more important that the relative prices to global consumer prices. Their negative sign points to the orthodox substitution effect instead of the neostructuralist income effect, although the ECM suggest a dynamic lagged effect of this type. 3) The results concerning the Keynesian harming effect of competitive imports are not so clear either. However it is clear that the effect of quantitative controls is far less weak than that of relative prices to imports. 4) Consistently with the results of the investment function, the weight of long term credit indicates the strong effect of the constraints imposed on these segment of credit supply on the demand for KG. 5) The more important influence of coffee exports than of the fiscal stance upon demand for the aggregate does not confirm the ability of the fiscal instruments to compensate for the impact of the coffee boom. Meanwhile, monetary instruments seems to be able to play a more important contractionary role.

3.4. IMPORT LIBERALIZATION AND EXPORT DETERIORATION

After an introductory discussion about the determinants of the deterioration of trade performance, sections 3.4.2. and 3.4.3. focus on the expansion of manufactured imports (M) and the deterioration of manufactured exports (X), respectively.

3.4.1. THE EROSION OF THE TRADE BALANCE

We now introduce the analysis of the determinants of the erosion of trade balance from two points of view. First, the contribution of a particular mechanism, i.e. the rate of devaluation, to the competitiveness decline is considered. Second, a more general perspective on the determinants of the M expansion and the X deterioration is introduced by summarizing the hypothesis underlying the econometric analysis of these determinants.

Although we concentrate in this chapter on the rate of devaluation aspect of the competitiveness decline underlying the expansion of M and the deterioration of X, some international comparisons are introduced in the section on exports deterioration to illustrate the impact of the productivity stagnation discussed in chapter 4. With regard to the other aspect of economic policy affecting the evolution of M and X, the reduction in tariffs and quantitative controls is considered in section 3.4.2., and the weakening of the export promotion package in section 3.4.3. However, in accordance with the importance of each factor, while the role of the liberalization policy is emphasized in the case of M, the effect of the stagnation of productivity and the deterioration of the conditions in foreign markets are stressed in the case of X.

In connection with the contribution of the decline in the rate of devaluation to the competitiveness decay of domestic production, devaluation no longer compensated the change in price relation after 1973 (Table 3.4-1.) 84/. Meanwhile, since this

appreciation was fostered by the boom in coffee earnings during the second half of the decade (Table 3.4-1.) 85/ the loss in competitiveness of imports substitution and exports (implied by the fall in the rate of devaluation to a level lower than the rate of inflation of domestic prices) appears as a Dutch Disease symptom.

As for the econometric analysis of foreign trade, the underlying hypothesis are either of a general or of a specific type. The elastic-supply demand-constraint hypothesis, which follows from the distinction of trade in manufactures from the perfect competitive case of primary commodities, implies the crucial influence of the income argument. More specificly, while M are mainly determined by GNP as an index of the size of the domestic market, X are mainly determined by world trade as an index of the size of the international market. Another general hypothesis is the influence of relative prices, which more specificly points to the importance of the competitiveness erosion brought about by devaluation lagging behind domestic inflation. Other specific hypothesis are the role of quantitative restrictions in determining M, and that of domestic excess supply in determining X.

3.4.2. THE ACCELERATION OF M

The following analysis of the expansion of M includes a first section on the determinants of this expansion, and a second section on its impact. A final section presents the results of the econometric estimations of M functions.

3.4.2.1. The determinants of the M expansion.

We have already mentioned the role of the movement in relative prices linked to the foreign exchange boom in the expansion of manufactured M of the second half of the seventies. We now

consider the contribution of two factors also related to the extraordinary exports earnings, the increase in income and the liberalization in the quantitative restrictions regime 86/. To stress the importance of these mechanisms, we discuss the determinants of M and characterize the liberalization process.

3.4.2.1.1. The determinants of the M expansion. We consider two complementary approaches: first, "structural" evidence provided by the results of econometric estimations; second,"conjunctural" evidence from the behaviour of these factors during the period. The results of the econometric estimations of the M functions point to a greater influence of income vis-a- vis relative prices, which are also less significant than quantitative controls 87/. The application of this basic result to the period 1978-82 of M expansion requires some qualifications 88/. The M increase of 1978 was determined by GDP and industrial production expansions of that year. However, it has been shown (Lora. 1984) that the liberalization of quantitative restrictions played a more important role in explaining M growth since 1980 89/. The dynamic behaviour of M seems to be determined by a complex combination of income effect and the effect of the excess demand created by quantitative restrictions. On the one hand, as with the flexible accelerator, the lifting of those restrictions can not substitute for the operation of the income effect: before 1978 the level of M did not respond to the liberalization measures in the anticipated manner due to the prolongation of the industrial recession of 1974-75 by the adjustment policy. On the other hand, once the accelerator effect has taken place repressed excess demand can prolong M dynamism, unless its effect is constrained by increases in quantitative restrictions: after reacting to the expansion of 1978 its dynamism did not lessen pari passu with the deterioration of productive activity after 1980, and its later reduction required the stricter control measures of the Betancourt government (1982-86).

As for the influence of factors working through relative prices

90/, the Dutch Disease symptoms brought about by the combination of the exchange rate revaluation with the lifting of quantitative controls were particularly clear in 1977 and 1980 when especially high rises in coffee income, as well as in the coefficient of M penetration and the commercial deficit of the sector, coincided with declines in capacity utilization. With regard to other supply and demand factors, the influence of tastes 91/ and technology must not be overlooked. Indeed, the consequences of the lack of technological progress are epitomized in the dramatic loss of competitiveness of the textiles sector which contributed to the substantial increase in both legal and illegal M 92/. As for KG, the additional crucial factor contributing to the massive M inflow was the government purchasing policy, the role of which is illustrated by both the magnitude of government M of KG, and the importance of government demand for the production of some branches of the sector 93/.

3.4.2.1.2. The liberalization policy. During the period of relative exchange solvency of the Colombian economy between the establishment of the 1967 exchange statute and the decline in the availability of reserves inherited from the coffee boom, a substantial transformation of the protection structure took place. The liberalization process of the 1968-82 period included both direct administrative instruments and tariffs and previous deposits 94/. A substantial reduction in tariff levels took place (see Table 3.4-2.) which, from an intersectoral viewpoint though, did not modify the tendency to favour consumption goods and the bias against capital goods (see Table 3.4-3). 95/. With regard to quantitative restrictions, starting with the elimination of the prohibited list in 1973 a considerable number of items were moved from previous licence to free import regime 96/.

We introduce two qualifications to evaluate the influence of this process. Rather than a radical implementation of a neoliberal strategy exposing domestic manufacturing production to across the

TABLE 3.4-1
EVOLUTION OF EXCHANGE RATE

YEAR	A. REAL EXCHANGE RATE	B. DEVALUATION RATE	C. INFLATION RATE	D. CAT/CERT minor exports average
1970	109.3	7.0	6.9	13.6%
1971	109.9	9.5	13.3	14.6
1972	110.5	9.0	14.0	13.2
1973	110.9	8.8	23.1	12.7
1974	104.9	15.3	25.4	13.8
1975	107.6	15.3	17.6	4.8
1976	102.1	10.2	25.7	3.5
1977	91.5	4.9	27.9	2.6
1978	89.7	8.0	19.3	3.7
1979	86.5	7.3	28.7	5.7
1980	90.1	15.7	25.9	4.5
1981	89.5	16.0	26.5	5.0

SOURCES:
A. Index of Real Exchange Rate
OCAMPO, J.A. (1982)
B. Devaluation rate (%)
Banco de la Republica. (Based on exchange rate at end of period).
C. Inflation rate (%)
Banco de la Republica. (Based on index of whole sale commercial prices).
D. CAT/CERT as a prportion of minor exports according to custom. It is used the exchange rate of each year. Data taked from Banco de la Republica.

TABLE 3.4-2
THE EVOLUTION OF PROTECTION

Years	A Indexes of quantitative restrictions		B Average Tariff Rate		C Exchange Rate	
	IRIM (1)	DIRIM (2)	A (3)	ANC (4)	NM (5)	RM (6)
1963	62.4	23.1	12.9	18.3	9.0	75.8
1964	62.7	21.9	12.9	14.6	9.0	65.4
1965	84.9	42.5	15.1	16.7	9.8	71.2
1966	43.6	-0.4	22.6	23.0	13.0	82.2
1967	96.2	50.5	15.1	15.3	14.1	84.1
1968	83.0	35.6	13.0	14.0	16.1	93.4
1969	82.8	33.6	13.7	13.9	17.2	94.9
1970	81.0	29.9	14.5	15.9	18.4	100.0
1971	71.7	18.7	14.5	15.5	19.9	103.9
1972	71.9	16.8	15.6	16.4	21.9	107.9
1973	68.8	11.6	16.4	17.4	23.6	107.9
1974	56.4	-3.0	11.7	11.8	26.1	105.0
1975	57.2	-4.4	11.8	12.1	30.9	109.2
1976	60.2	-3.8	11.7	11.6	34.7	108.2
1977	58.8	-7.6	12.8	11.7	36.8	93.6
1978	57.2	-11.8	12.1	9.7	39.1	94.4
1979	55.6	-16.0	12.5	11.2	42.6	93.7
1980	56.0	-18.3	12.0	10.8	47.3	90.8
1981	47.8	-29.4	11.4	10.4	54.5	85.3
1982	45.3	-34.8	11.3	10.3	64.1	79.5
1983	58.6	-24.6	10.4	10.3	78.9	80.1

QUANTITATIVE RESTRICTIONS

A. Portion of items under previous license regime		B. Portion of value unsatisfied by rejection in previous licences	
Year	%	Year	%
1971	96	1972	17.30
1974	70	1973	13.60
1975	66		
1979	46		
1980	34	1980	2.48
1982	29	1981	6.92

SOURCES: A1 LgTL-75 Echaverrda et.al. (1980) p.191.
LgTL-82 Garay (1982) p. 57,58.
LgTL-78 Garay et.al. (1974) p. 94.
L980-81 Garay (1982) p.66.

(1) Proportion of imports approved under previous license regime.
(2) Deviations from IRIM logaritmic trend.
(3) For imports other than fuels.
(4) Not explained by import composition.
(5) Nominal Imports
(6) Real Imports.Base 1970=100.

TABLE 3.4-3

TARIFF STRUCTURE
By sector (Arithmetic Average)

	A NOMINAL (Arithmetic Average)					B Effective (7)			
	1970	1975	1979	1980	1982	1972	1974	1979	1980
	1	2	3	4	5	6 (3)	7 (3)	8	9
Consumption						46.8 (4)	54.8 (4)	87.28	81.22
Non-durable	74.5	34.5	30.64	27.89	26.48				
Durable	81.8	53.3	50.2	47.17	43.49				
Intermediates	42.2	29.8	25.55	23.06	21.32	19.0 (5)	18.4 (5)	32.18	29.2
Metalmechanic			25.89	24.09	24.47			42.34	39.13
and	44.2 (1)	30.4 (1)				43.5 (6)	29.3 (6)		
Transp.EQ			36.99 (2)	33.60 (2)	33.60 (2)				
Fuels	33.0	18.5	13.55	12.62	10.39				
SUBTOTAL INDUS.	52.0	33.0	29.35	26.88	26.62				
Primary	51.6	19.5	15.85	14.83	15.8	23.3	8.9	25.98	24.06
TOTAL	51.9	32.6	28.3	25.96	25.91	33.7	35.2	47.55	43.79

SOURCES: 1-2 MARTINEZ (1982) P. 238
3-5 GARAY(1982) P. 50
6-7 GARAY ET. AL. (1974) APENDICE I
8-9 GARAY (1982) P. 54

NOTES: (1) Both metalmechanic and transportation equipment
(2) Transportation separate from metalmechanic
(3) Non-equivalent classification.See Garay et.al (1974) Apendix III.
(4) Traditional Industries
(5) Intermediate Industries
(6) Metalmechanic Industries
(7) Levels not strictly comparable between 72-74 and 79-80

TABLE 3.4-4

EVOLUTION OF MANUFACTURED IMPORTS

	Real value MILL.$ OF 1970	Rate of Growth	Base Index 70	Import Penetration
1958	9121	-	24.5	35.26
1959	9356	2.58	26.1	32.90
1960	11550	23.45	27.4	37.09
1961	11942	3.40	28.1	35.57
1962	12631	5.77	27.1	34.01
1963	10790	-14.57	39.1	29.05
1964	12833	18.93	37.5	31.76
1965	9744	-24.08	40.6	25.18
1966	12856	31.94	61.7	28.52
1967	9491	-26.17	67.2	20.76
1968	11062	16.55	83.3	17.90
1969	11550	4.41	92.2	22.10
1970	14011	21.31	100.0	24.55
1971	14967	6.82	109.0	23.89
1972	14001	-6.46	121.1	21.00
1973	15561	11.14	142.7	21.57
1974	17284	11.08	210.9	22.80
1975	15614	-9.66	259.0	20.99
1976	17328	10.98	299.1	21.41
1977	18065	4.25	346.9	21.37
1978	22628	25.26	390.3	24.12
1979	23781	5.10	467.2	24.15
1980	28648	20.47	587.2	28.90
1981	30811	7.55	702.2	32.06
1982	32868	6.68	814.7	34.51
1983	29930	-8.94	955.1	30.93
1984	28551	-4.61	1191.9	26.80
1985	25662	-10.12	1632.8	21.92
1986	28221	9.97	2158.8	21.99
1987	30034	6.43	2885.0	22.32

Rate of Growth (1)

	Imports	Import Penetration (2)
1958-1967	1.09	-4.97
1967-1974	7.79	1.68
1974-1982	9.82	6.09
1978-1982	13.01	9.59
1982-1987	-0.10	-8.02

SOURCE: Author's calculations. See method in Chica (1983).

NOTES:

(1) 1958-67, 1967-74, 1974-82 :EXPONENTIAL AVERAGE, g en: ln X(t) = a + gt; 1978-82: AVERAGE OF ANNUALS.

(2) Penetration = Imports/Production

TABLE 3.4-5

DISTRIBUTION, RATES OF GROWTH OF MANUFACTURED IMPORTS BY SUB-AGGREGATES

PERIOD		Share s	Rate of growth g(1)	Weighted rate of growth sg	Import Penetration p (2)
1958-67	LC	4.80	1.74	8.36	3.04
	CD	10.23	4.17	42.67	62.83
	IG	41.50	0.02	0.67	36.47
	KG	43.48	1.71	74.46	134.26
1967-74	LC	5.85	12.78	74.79	3.17
	CD	11.76	3.64	42.86	38.42
	IG	43.41	11.57	502.34	25.41
	KG	38.98	4.03	157.06	66.36
1974-82	LC	8.18	14.94	122.23	5.04
	CD	13.31	13.32	177.31	37.20
	IG	40.02	6.57	262.79	27.26
	KG	38.49	11.25	432.83	86.80
1978-82	LC	8.93	13.65	121.63	5.80
	CD	14.22	17.45	248.14	40.73
	IG	37.68	5.37	202.49	29.33
	KG	39.19	11.67	457.37	60.78
1982-1987	LC	7.55	-7.74	-58.44	4.15
	CD	12.76	-4.88	-62.27	34.15
	IG	43.40	5.29	229.59	28.92
	KG	36.29	0.79	28.67	53.55

SOURCE: Author's calculation.

NOTES: (1) 1958-67, 1967-74, 1974-82: Exponential average, g en ln x(t) = a + g(t)
1978-82: Average of annuals.
(2) Penetration = Imports/Production

LC: Light Consumption
CD: Durable Consumption
IG: Intermediate Goods
KG: Capital Goods

TABLE 3.4-6
IMPORTS: SECTOR SHARE, GROWTH RATES AND CONTRIBUTION

SECTORS	1967-1974			1974-1982			1978-1982			1982-1987			g(67-74)/ g(74-82)
	s	g	c	s	g	c	s	g	c	s	g	c	
20	2.94	9.69	3.07	5.19	17.80	8.30	5.66	12.34	6.45	4.40	-6.89	32.07	0.544
21	0.79	19.33	1.45	0.73	10.94	0.92	6.76	18.90	1.37	0.64	-7.49	4.39	1.767
22	0.09	9.31	0.07	0.38	51.22	1.03	0.58	26.15	0.83	0.23	-21.21	4.60	0.182
23	1.73	9.78	1.78	1.95	9.58	1.15	1.95	1.93	0.12	1.27	13.15	-0.82	1.021
24	0.17	23.65	1.08	0.53	12.07	0.41	0.62	26.10	0.87	1.04	14.38	-7.91	1.959
25	0.17	9.32	0.17	0.19	18.30	0.33	0.21	15.82	0.24	0.22	-10.19	1.09	0.509
26													
27	4.56	8.86	5.15	3.60	6.51	2.30	3.38	8.09	2.67	3.83	1.41	3.70	1.361
28	2.04	15.79	2.75	1.34	5.53	0.65	1.28	12.70	1.35	1.24	-10.38	3.64	2.855
29	0.02	8.03	0.03	0.07	28.73	0.20	0.10	49.49	0.20	0.09	2.70	0.16	0.279
30	0.51	10.69	0.74	0.89	13.36	1.31	0.87	8.93	0.83	0.55	-13.41	6.40	0.800
31	22.96	15.48	41.41	20.37	3.48	2.62	17.74	0.95	1.14	23.30	10.07	-87.59	4.447
32													
33	1.81	10.44	1.83	1.41	2.86	0.04	1.20	-2.62	-0.37	0.93	1.46	0.90	3.651
34	11.72	6.68	11.93	10.30	10.12	10.08	10.67	10.88	11.75	10.91	0.10	30.55	0.660
35	2.55	6.56	2.03	3.27	20.81	7.74	4.14	30.17	9.84	4.14	-17.51	27.52	0.315
36	22.65	3.86	6.91	19.79	10.79	20.48	20.01	9.04	17.44	19.30	3.60	-0.34	0.358
37	8.58	5.53	5.91	8.55	13.15	14.04	8.98	18.73	15.78	10.17	2.20	14.89	0.421
38	17.01	3.1	12.25	18.39	11.18	24.36	18.65	14.39	25.12	14.68	-1.44	63.18	0.277
39	3.15	0.51	1.43	3.05	12.04	4.05	3.19	14.42	4.37	3.67	2.31	3.58	0.042

SOURCE: Author's calculations based on information from the BANE.

p= participation
g= growth
c: contribution = sector imports growth/total imports growth

TABLE 3.4-7
IMPORTS FUNCTION

	VD	PERIOD	R2-BAR	DW	RSS	AC	CONST	LRGNI	LPRMT	LPRMLC	LPRMCD	LPRMIG	LPRMKG	LIQC1	LMLC(-1)	LMCD(-1)	LMIG(-1)	LMKG(-1)
1	LMT	58-85	0.9418	2.33	0.250		-2.427	1.034	-0.660					-0.061				
							(-2.409)	(12.778)	(-3.927)					(-3.253)				
2	LMLC	58-85	0.8956	2.24	1.040		-9.432	1.328		-0.245				-0.083	0.119			
							(-3.362)	(4.035)		(-0.976)				(-1.877)	(0.611)			
3	LMCD	58-85	0.9452	1.93	0.940		-1.916	0.560			-0.110			-0.076		0.409		
							(-1.150)	(2.471)			(-0.469)			(-3.007)		(2.507)		
4	LMIG	58-85	0.8783	2.05	0.470		-2.749	0.980				-0.575		-0.037				
							(-2.040)	(9.149)				(-2.089)		(-1.353)				
5	LMKG	59-85	0.8842	1.75	0.310		-0.187	0.469					-0.251	-.063				0.412
							(-0.086)	(1.471)					(-0.815)	(-2.530)				(1.842)

	VD	PERIOD	R2-BAR	DW	RSS	AC	CONST	LRGNI	LPRMT	LPRMLC	LPRMCD	LPRMIG	LPRMKG	LIQC1	LMLC(-1)	LMCD(-1)	LMIG(-1)	LMKG(-1)
6	LMT	58-73	0.7745	1.78	0.077		0.693	0.866	-0.316					-0.343				
							(0.369)	(5.483)	(-1.540)					(-4.157)				
7	LMT	74-85	0.9324	1.76	0.037		-5.634	1.292	-0.745					-0.039				
							(-0.710)	(2.554)	(-0.801)					(-2.755)				
8	LMLC	58-73	0.6750	1.93	0.390		0.428	0.767		0.755				-0.634				
							(0.130)	(2.650)		(1.809)				(-3.766)				
9	LMLC	74-85	0.8526	1.76	0.180		-21.940	2.419		-0.036				-0.049				
							(-1.840)	(2.468)		(-0.065)				(-1.589)				
10	LMCD	58-73	0.7185	2.31	0.160	X	-9.280	1.531			-0.873			-0.345				
							(-2.456)	(4.539)			(-2.221)			(-3.583)				
11	LMCD	74-85	0.8216	1.82	0.180		-12.123	1.659			-0.384			-0.078				
							(-0.902)	(1.489)			(-0.258)			(-2.214)				
12	LMIG	58-73	0.8733	2.16	0.066		1.470	0.811				0.0066		-0.589				
							(0.821)	(5.356)				(0.027)		(-7.593)				
13	LMIG	74-85	0.7716	2.01	0.050		-7.311	1.204				-0.046		-.0073				
							(-1.079)	(1.704)				(-0.056)		(-.331)			1.950	
15	LMKG	58-73	0.5445	2.02	0.110	X	-1.112	0.912					-0.591	-0.262			(.653)	
							(-0.447)	(4.073)					(-2.706)	(-2.624)				
16	LMKG	74-85	0.9237	1.70	0.050		-15.176	1.973					1.547	-0.056				
							(-5.413)	(8.786)					(3.165)	(-3.430)				

LMT LOG OF MANUFACTURING IMPORTS
LMLC LOG OF IMPORTS OF LIGHT CONSUMPTION
LMCD LOG OF IMPORTS OF CONSUMER DURABLES
LMIG LOG OF IMPORTS OF INTERMEDIATE GOODS
LMKG LOG OF IMPORTS OF CAPITAL GOODS
LRGNI LOG OF REAL GROSS NATIONAL INCOME
LPRMT LOG OF RELATIVE PRICES OF MANUFACTURING IMPORTS= IMPORTS PRIC INDEX/WHOLESALE PRICE IINDEX FOR DOMESTIC GOODS
LPRMLC LOG OF RELATIVE PRICES OF IMPORTS OF LIGHT CONSUMPTION= IMPORTS PRIC INDEX/WHOLESALE PRICE INDEX FOR DOMESTIC GOODS
LPRMCD LOG OF RELATIVE PRICES OF IMPORTS OF CONSUMER DURABLES= IMPORTS PRIC INDEX/WHOLESALE PRICE IINDEX FOR DOMESTIC GOODS
LPRMIG LOG OF RELATIVE PRICES OF IMPORTS OF INTERMEDIATE GOODS= IMPORTS PRIC INDEX/WHOLESALE PRICE IINDEX FOR DOMESTIC GOODS
LPRMKG LOG OF RELATIVE PRICES OF IMPORTS OF CAPITAL GOODS= IMPORTS PRIC INDEX/WHOLESALE PRICE IINDEX FOR DOMESTIC GOODS
LIQC1 LOG OF IMPORTS QUANTITATIVE CONTROL INDEX
LMLC(-1)LOG OF IMPORTS OF LIGHT CONSUMPTION LAGGED ONE PERIOD
LMCD(-1)LOG OF IMPORTS OF CONSUMER DURABLES LAGGED ONE PERIOD
LMIG(-1)LOG OF IMPORTS OF INTERMEDIATE GOODS LAGGED ONE PERIOD
LMKG(-1)LOG OF IMPORTS OF CAPITAL GOODS LAGGED ONE PERIOD

TABLE 3.4-8
IMPORT SIMULTANEOUS MODEL

Aggregate

D.V.	LYD	LPRIPT	LMT	LRGNI	LQD
LQD	1.262	-0.338	-0.252		
	(22.283)	(-9.280)	(-4.126)		
LMT				0.622	0.210
				(2.199)	(0.691)

Consumer Durables

D.V.	LYD	LPRCCD	LMCD	LRGNI	LQDCD
LQDCD	1.966	-2.238	-0.640		
	(9.054)	(-10.045)	(-2.953)		
LMCD				0.290	0.493
				(4.702)	(5.615

LQD: LOG OF DEMAND FOR MANUFACTURES
LMT: LOG OF MANUFACTURING IMPORTS
LYD: LOF OF DISPOSABLE INCOME
LPRIPT: LOG OF MANUFACTURING PRICES RELATIVE TO WHOLESALE PRICES
LRGNI: LOG OF REAL GROSS NATIONAL INCOME
LQDCD: LOG OF DEMAND FOR CONSUMER DURABLES
LMCD: LOG OF IMPORTS OF CONSUMER DURABLES
LPRCCD: LOG OF CONSUMER DURABLE PRICES RELATIVE TO PRODUCER PRICES

board competition, a rationalization of the structure of protection took place 97/. Nevertheless, the KG sector was subject to declining protection by the combination of the various elements of the policy. The importance of the abandonment of the IS deepening implied by the bias against this sector was demonstrated by the expansion of KG M consider in the following section 98/.

3.4.2.2. The impact of the M expansion

After describing the M expansion we weigh its impact by means of two complementary considerations: first, we note the increase of the coefficient of M penetration and the decay in the growth contribution of IS; second, we discuss the extent to which M competed with domestic production. While that initial evaluation suggests a harmful impact on domestic production, the latter discussion does not provide clear cut conclusions as to the generation of a specifically detrimental competition for this production. These considerations though point to the reversal of the M substitution process in the CD and KG sector.

3.4.2.2.1. The M expansion described. The increase in the growth of M from 1967-74 to 1974-82 (see table 3.4-4.) 99/ contrasts with the decrease in the growth of output in the same period. This reversed the tendency for the import penetration coefficient to decline from 1978, to the point of almost recovering its late fifties level in the early eighties. From a sectoral viewpoint, KG's M grew remarkably after 1974 (see Table 3.4-5), the contrast between this growth and that for 1967-74 indicating the abandonment of the IS process in this sector 100/.

3.4.2.2.2. Evaluating the impact of the M expansion. The contractionary effect of a greater propensity to import was concentrated in the manufacturing sector 101/. Looking within the sector, the increase the growth of M (in the peak years of 1978 and 1980) as well as the reduction of the dynamic

contribution of IS (see Tables 3.4-6 and A.3.4-1), point to a concentration of the impact of the M expansion in the KG sector (and to a lesser extent in the IG sector) 102/. In particular, the concentration of the reversal of the import substitution process in KG 103/ is demonstrated by the magnitude of the negative IS contribution to growth in the metal mechanic and metallurgy sectors (34 to 39) 104/.

To detect a substantial exposure to foreign competition we consider whether the structure of M kept a relation of complementarity or one of substitution with the structure of output. A first simple empirical exercise to detect a transformation in the structure of M towards a competitive one fails to detect this transformation 105/. On the other hand, a simultaneous model does not provide conclusive evidence as to whether M substitute for domestic production or complement it 106/, although the econometric results presented below seem to confirm the operation of this competitive effect, particularly in the case of CD.

Therefore, as far as legal M is concerned, the hypothesis of competitive substitution has some plausibility for KG and CD. To complete the picture we comment upon illegal M. The impact of smuggled substitutes was specially significant in textile, tobacco and electrical appliances sectors 107/. Textiles and tobacco must be thus added to the KG and CD sectors as those affected by the increase in competitive M.

3.4.3. ECONOMETRIC RELATIONS

Before referring to our results it is worth mentioning that previous estimations following the methodology of Villar (1985) 108/ confirm his results concerning the greater influence of income vis- a-vis quantitative controls and relative prices upon M. Table 3.4-7 shows: 1) While the income elasticities are close to 100% 109/, the price elasticities reach 60% (and are

statistically significant) only for total manufacturing and IG 110/. 2) Quantitative controls are statistically significant more consistently than relative prices of imports, except for IG 111/. 3) The estimations for subperiods (regressions 6 to 16) indicate an increase in income elasticity both for total manufacturing and for LC and KG, as well as a decline in the quantitative control index and price elasticities (the latter for CD and KG). 4) The analysis of simultaneity with production (Table 3.4-8) suggests a competitive effect of M for total manufacturing and for CD.

3.4.3. THE EXPORT CRISIS

The following analysis includes a first section on the determinants of the export crisis, a second section on its impact, and a final section on the results of the econometric estimations of export functions.

3.4.3.1. The determinants of the exports deterioration.

3.4.3.1.1. The fall in export dynamism described. The fall in the growth of X from 1967-74 112/ to 1974-82 was concentrated in 1978-82 (particularly in 1981-82 see Table 3.4-9), with the X of IG (and to a lesser extent KG: see Table 3.4-10) falling most acutely 113/. In particular (see Table 3.4-11) textiles and rubber products suffered the greatest export deterioration 114/.

3.4.3.1.2. The determinants of the exports deterioration. We consider two complementary approaches: first, structural evidence on factors determining export deterioration provided by econometric analysis; secondly, conjunctural evidence about the behaviour of these factors during the period. We concentrate on two basic factors: income or size of the market, and relative prices or competitiveness.

In a previous econometric investigation (Chica. 1980) we obtained a superior significance of the income or demand factor over the variable of relative prices, as well as a positive intersectoral correlation between export dynamism and previous import substitution deepening 115/. Similarly, and consistent with other studies 116/, section 3.4.3.3. points to the primary importance of the volume of world trade. As for the effective real exchange rate, the influence of the subsidies element is not clear 117/. Thus, from the econometric analysis of the determinants of X dynamics we conclude that a lower (higher) level of activity in the world economy manifests itself in a lower (higher) demand for M and higher (lower) levels of protection (of employment) at an international level. In line with this econometric evidence, the critical years (for X) of 1974-75 and 1981-82 coincide with the contractions of international trade and the world economy (see Table 3.4-12) 118/. As for the relative price factor, X competitiveness deteriorated when the reduction in the rate of devaluation implied by the adjustment policy to the coffee X boom coincided with an increase in the rate of growth of unit costs due to a rise in input costs inflation in the face of stagnant productivity growth. Thus relative prices and incentives may have contributed to the 1975 contraction, only relative prices to the 1981 contraction, and neither to that of 1974 (see Table 3.4-12). Therefore, concerning the critical years 1974-75 and 1981, while the dynamics of international trade contributed to the three contractions, the effective real exchange rate contributed to the 1975 contraction, and its real exchange rate component contributed to the 1981 contraction.

With regard to (effective real) exchange rate policy, despite the way in which the expansion of PROEXPO credit counteracted the deterioration of the CAT, the incentives did not compensate for the deterioration of the real exchange rate after 1974. However, with regard to the export stagnation of the period, policy (particularly the exchange rate lag) was a factor reinforcing the effect of the external market rather than the fundamental

determinant of the export crisis 119/. We reach two conclusions concerning the contribution of the exchange rate policy to the X deterioration of the period: first, the link between the policy of adjustment to the coffee boom and the lag of exchange rate devaluation behind domestic inflation renders that deterioration a symptom of the Dutch disease syndrome; secondly, the importance of this factor lies in the inability of devaluation to compensate for international trade deterioration so allowing Colombian X to maintain their market shares 120/.

Concerning the other aspect of competitiveness, productivity growth, it is worth stressing two related aspects. First, after achieving levels of productivity in some sectors during the sixties which allowed Colombian manufacturing to take advantage of the export boom, its position deteriorated as a result of the fall in productivity growth from the end of the sixties. The competitive position of Colombian X 121/ which allowed the sector to profit from the export boom, suffered from the combination of a decline in productivity growth with the wage inflation of the second half of the seventies 122/. Note (Table 3.4-13) that in Brazil the pace of productivity growth recovered in the eighties (after falling from the sixties to the seventies), and in Mexico, the increase of the seventies was not offset by the fall of the eighties. In Colombia, however, a continuous decrease took place throughout the two decades 123/. Secondly, the intersectoral structure of colombian X shows that although the exporting sectors have efficiency indicators above the average 124/, an excessive diversification and an inadequate specialization is observed: Colombian industry showed indicators of revealed comparative advantage (UNIDO,1982), inferior as well as dispersed in a greater number of sectors, indicating an excessive number of sectors exporting with low levels of competitiveness 125/; on the other hand, some of these sectors reflect inconvenient export development, in terms of either a high Bruno index (foods), or of the low social value of their export expansion (textiles and chemicals), or their excessive development in relation to an intersectoral pattern consistent with income elasticity or technological dynamism advantages (Echavarria et al 1983).

EVOLUTION OF MANUFACTURED EXPORTS

	Real value Mill.$ of 1970	Rate of Growth	Base Index 1970	Export Openness %
1958	248	-	33.7	0.97
1959	265	6.85	35.9	0.94
1960	250	-5.50	40.1	0.81
1961	413	64.94	36.6	1.24
1962	494	19.53	39.3	1.23
1963	592	19.85	47.4	1.61
1964	691	16.86	45.4	1.73
1965	1126	62.80	55.5	2.70
1966	1072	-4.75	77.2	2.41
1967	1073	0.04	78.8	2.35
1968	1684	56.97	86.0	3.34
1969	1957	16.21	100.0	3.70
1970	2059	5.23	116.4	3.61
1971	2338	13.59	145.6	3.76
1972	3644	55.83	177.8	5.47
1973	5200	42.70	276.3	7.06
1974	5027	-3.33	321.9	6.42
1975	4702	-6.46	314.2	5.14
1976	5628	19.70	355.7	6.72
1977	5735	1.90	424.6	6.42
1978	5888	2.66	555.2	5.90
1979	6287	6.78	749.8	5.82
1980	6927	10.18	858.0	6.41
1981	6721	-2.97	918.6	6.49
1982	6481	-3.57	1129.7	6.17
1983	5227	-19.35	1391.1	4.94
1984	5103	-2.36	1748.7	4.37
1985	6410	25.60	2469.3	5.09
1986	7623	18.93	3371.8	5.49
1987	8509	11.62	4682.7	5.81

	Rate of Growth (1) Production	Export Openness %
1958-196	19.51	13.19
1967-197	21.96	14.27
1974-198	4.33	-0.38
1978-198	2.61	1.26
1982-198	5.14	-0.26

SOURCE: Author s calculations.
NOTES:
(1) 1958-67, 1967-74, 1974-82 :EXPONENTIAL AVERAGE, g en: ln X(t) = a + gt; 1978-82: AVERAGE OF ANNUALS
(2) Openness (x): Exports / Production

MANUFACTURED EXPORTS: SHARE, RATE OF GROWTH BY SUB-AGGREGATES

PERIOD		Share s	Rate of growth g (1)	Weighted rate of growth sg	Export Openness x
1958-67	LC	25.87	41.47	1073.07	1.00
	CD	7.71	7.06	54.46	2.19
	IG	46.89	16.62	779.51	2.02
	KG	19.52	16.12	314.77	2.91
1967-74	LC	32.98	21.08	695.32	3.79
	CD	9.41	32.09	301.84	7.14
	IG	39.98	20.28	810.95	4.92
	KG	17.63	22.24	392.01	6.20
1974-82	LC	40.03	7.24	289.98	6.45
	CD	8.56	9.22	78.97	6.09
	IG	33.87	-0.54	-18.42	5.85
	KG	17.53	4.97	87.14	6.72
1978-82	LC	42.34	4.59	195.23	6.63
	CD	9.39	12.94	121.49	6.42
	IG	30.25	0.05	1.44	5.36
	KG	17.77	0.76	13.53	6.47
1982-1987	LC	43.88	9.47	415.35	5.28
	CD	6.83	8.02	54.78	3.75
	IG	36.91	19.44	717.69	5.90
	KG	12.38	15.17	187.73	3.90

SOURCE: Author's calculation.

NOTES: (1) 1958-67, 1967-74, 1974-82: Exponential average, g en ln x(t) = a + g(t)
1978-82: Average of annuals.
(2) Openness (x): Exports / Production

LC: Light Consumption
CD: Durable Consumption
IG: Intermediate Goods
KG: Capital Goods

TABLE 3.4-11

EXPORTS: SECTOR SHARE, GROWTH RATES AND CONTRIBUTION BY SUBPERIODS

SECTORS	1967-1974			1974-1982			1978-82			1982-1987			q(67-74)/ q(74-82)
	s	q	c	s	q	c	s	q	c	s	q	c	
20	26.25	14.38	12.61	25.05	6.29	64.25	24.36	4.17	38.75	28.11	1.35	-2.72	2.287
21	0.03	32.47	0.07	0.04	12.60	0.08	0.05	58.63	0.56	0.16	42.49	0.76	2.578
22	0.07	16.66	0.06	0.12	29.16	0.44	0.15	-11.25	-1.16	0.12	-9.60	-0.16	0.571
23	13.46	29.80	20.84	12.70	-7.65	-31.58	9.58	-10.80	-50.96	7.79	16.68	12.98	-3.895
24	4.40	61.33	16.60	12.24	9.35	25.44	14.56	14.52	65.81	10.80	27.52	6.99	6.557
25	3.88	6.33	1.09	1.52	-1.25	-1.39	1.35	12.10	4.36	1.04	20.22	-1.13	-5.066
26													
27	1.88	-23.06	-1.57	2.25	24.57	6.15	2.57	18.69	8.53	2.57	15.61	1.39	-0.939
28	2.10	27.24	2.32	3.56	9.17	7.34	3.20	-8.17	-25.73	4.19	23.70	7.75	2.969
29	4.94	12.21	1.50	2.82	2.93	4.73	2.49	-0.21	-2.34	3.43	25.74	8.42	4.167
30	1.51	5.18	0.41	0.89	-14.28	-2.87	0.51	-8.17	-2.07	0.48	28.39	1.46	-0.363
31	9.45	27.74	14.97	9.39	2.19	-0.74	9.62	7.85	26.48	17.04	21.92	50.42	12.692
32													
33	2.36	10.34	4.81	6.04	4.25	2.91	6.03	-2.20	-6.88	5.05	24.42	7.38	2.431
34	1.29	29.05	1.43	0.37	-23.25	-4.07	0.17	6.68	-1.82	3.75	21.49	15.91	-1.251
35	2.66	27.62	4.69	3.38	4.05	0.93	3.58	4.18	2.78	2.02	4.64	-3.33	6.813
36	3.38	25.58	5.64	5.24	0.45	-0.43	4.56	-9.03	-20.40	2.26	17.82	-2.44	57.054
37	1.10	26.19	1.86	2.00	10.88	4.27	2.39	14.73	7.31	1.40	42.83	1.27	2.407
38	2.11	57.63	2.35	2.95	5.21	2.20	2.68	-3.23	-12.34	1.53	32.76	-1.64	11.060
39	4.94	31.73	10.33	9.41	12.69	20.35	12.13	38.91	69.11	6.34	38.91	-3.32	2.500

SOURCE: Author s calculations based on information from the DANE.

s: Share

q: Growth

c: Contribution = sector exports growth / total exports growth

TABLE 3.4-12
DETERMINANTS OF THE DYNAMIC OF
MANUFACTURED EXPORTS

A. COMPONENTS OF THE REAL EFFECTIVE EXCHANGE RATE OF MINOR EXPORTS 1/

YEAR	IPx/IPD a. (1975=100)	CAT (%)	P.V. b. (%)	C.PROEXPO (%)	TOTAL (%)	ITCRE c. (1975=100)
1973	95.4	19.74	1.9	1.0	2.6	103.9
1974	100.6	21.79	2.2	0.9	24.9	124.4
1975	100.0	4.01	1.4	1.0	6.4	100.0
1976	96.6	4.59	1.5	1.2	7.3	97.6
1977	90.5	5.50	2.0	2.8	10.3	94.0
1978	83.8	4.89	2.0	3.5	10.4	87.1
1979	88.8	4.46	2.4	3.3	10.2	89.3
1980	92.4	7.42	1.8	3.4	12.6	98.1
1981	91.0	9.36	2.4	4.6	16.4	100.0
1982	82.1	11.37	2.1	5.4	18.9	92.6
1983	81.7	17.36	2.2	5.3	24.9	97.9

B. DYNAMIC OF INTERNATIONAL TRADE
(Rates of growth %)

Year	Real GDP of Industrial Countries 2/	Industrial Production USA 3/	Real GDP of Latin America 4/	Real Import Industrial Countries 5/	Real Imports USA 6/
1973	5.9	8.64	8.3	22.59	19.03
1974	0.2	0.00	7.0	40.92	47.97
1975	-1.2	-9.09	3.7	8.85	9.04
1976		11.25	5.5	1.41	3.06
1977	4.1	5.62	4.7	1.52	8.39
1978		5.32	5.1	9.74	7.90
1979		5.05	6.5	19.51	19.13
1980	1.5	-3.85	5.9	21.80	25.47
1981	1.3	3.00	1.5	-2.20	5.50
1982	-0.3	-8.74	-0.9	-5.61	-1.61
1983	2.2	6.38	-	-5.20	-4.14

a. Index of relative prices of minor exports vs. domestic market.
b. Credit incentive PROEXPO.
c. Index of real effective exchange rate.
* Average 1971-73. + Average 1976-79.

SOURCES:
1/ Fedesarrollo (1985c)
2/ O.E.C.D. Economic outlook.
3/ Own calculation based on index of the IMF (International Finance Statistics).
4/ CEPAL.
5/ Own calculation based on index of the IMF (International Finance Statistics).
6/ Own calculation based on index of the IMF (International Finance Statistics).

TABLE 3.4-13
EVOLUTION OF INDUSTRIAL PRODUCTIVITY
BY COUNTRIES 1950-1980
(Annual rates of growth)

Country	1950-60	1960-70	1970-80	1950-80
Argentina	0.5	4.6	1.9	2.3
Brazil	4.6	1.6	3.8	3.3
Colombia	3.6	1.5	1.0	2.0
Costa Rica	3.5	3.0	2.4	3.0
Chile	3.1	3.3	-0.7	2.9
Mexico	1.3	3.9	2.4	2.5
Peru	6.4	2.0	0.6	3.0
Uruguay	0.2	0.2	4.3	2.1
Venezuela	4.3	1.7	-0.7	1.8

SOURCE: Ramos (1984).

TABLE 3.4.14

	A. EXPORT FALLS BY SECTOR (Percentages)												B. Export openness
	1974			1975			1981			1982			1974-82
Sector	s	g	sg	s	g	sg	s	g	sg	s	g	sg	x
20	15.85	-18.52	-2.9	26.91	58.94	15.9	21.92	-2.96	-0.6	26.17	21.27	5.6	3.12
21	0.04	57.68	0.0	0.02	-57.18	0.0	0.06	108.06	0.1	0.06	4.45	0.0	0.01
22	0.06	15.19	0.0	0.03	-57.14	0.0	0.12	-2.20	0.0	0.21	72.23	0.2	0.17
23	17.34	10.69	1.7	16.29	-12.07	-2.0	8.78	-26.61	-2.3	6.72	-22.22	-1.5	2.58
24	12.62	102.61	13.1	8.28	-38.51	-5.2	13.75	-2.09	-0.3	15.37	13.56	2.1	8.17
25	1.72	-24.75	-0.4	0.80	-56.71	-0.5	0.94	9.06	0.1	1.11	20.60	0.2	8.76
26													
27	0.70	7.63	0.1	0.38	-48.44	-0.2	4.59	38.51	1.8	2.87	-36.44	-1.6	1.31
28	2.63	21.79	0.6	3.46	23.21	0.8	4.86	18.76	0.9	4.15	-13.37	-0.6	6.56
29	1.87	-45.61	-1.3	3.83	24.02	0.9	3.31	23.35	0.8	3.61	10.57	0.4	16.44
30	0.47	16.43	0.1	0.67	34.81	0.2	0.21	-6.17	0.0	0.13	-37.08	-0.1	0.31
31	15.47	44.06	6.8	13.48	-18.38	-2.5	11.18	-12.78	-1.4	11.90	5.34	1.0	2.14
32													
33	5.01	44.10	2.2	4.24	-20.71	-0.9	5.14	-13.06	-0.7	4.46	-11.89	-0.5	5.00
34	1.09	-16.01	-0.2	0.45	-61.41	-0.3	0.09	-47.95	0.0	0.16	78.88	0.1	0.34
35	3.93	52.83	2.1	3.07	-26.73	-0.8	3.06	-0.39	0.0	3.26	8.23	0.3	2.32
36	3.88	41.99	1.6	3.69	-10.80	-0.4	3.17	-10.93	-0.3	2.96	-5.08	-0.2	4.33
37	0.81	55.17	0.4	0.84	-3.07	0.0	1.49	51.52	0.8	1.65	12.54	0.2	0.72
38	2.14	60.52	1.3	3.01	32.01	1.0	4.39	18.68	0.8	2.24	-48.15	-1.1	1.65
39	6.77	-63.19	-4.3	4.82	-33.34	-1.6	12.17	1.20	0.1	8.64	-27.85	-2.4	4.10

s: Share
g: Growth
sg: Weigthed rate of growth
x: export openness = Exports/Production

TABLE 3.4-15
THE EXPORT FUNCTION

	VD	PERIOD	R2-BAR	DW	RSS	AC	CONST	LWT	LPRXT	LPRXLC	LPRXCD	LPRXIO	LPRXKO	LDEST	LDESLC	LDESCD	LDESIO	LDESKO	LXT(-1)	LXLC(-1)	LCIO(-1)	LXIO(-1)	LXKO(-1)
1	LXT	59-85	0.9672	2.04	0.970		-1.050	0.218	-0.232					1.664					0.774				
							(-1.160)	(1.675)	(-0.753)					(2.004)					(6.583)				
2	LXLC	59-85	0.8771	2.07	8.150		1.501	0.215		0.313					-0.580					0.637			
							(0.715)	(1.194)		(0.674)					(-0.551)					(3.871)			
3	LXCD	59-85	0.8859	1.80	2.920		1.164	0.203			0.360					0.853					0.530		
							(1.173)	(1.467)			(0.768)					(2.178)					(3.225)		
4	LXIO	59-85	0.9360	1.77	0.950		-1.924	0.375				-1.137					0.526					0.706	
							(-0.834)	(1.495)				(-1.851)					(1.083)					(5.702)	
5	LXKO	59-85	0.9608	1.50	1.010		2.324	0.022					-0.559					0.429					0.837
							(1.571)	(0.252)					(-2.007)					(1.143)					(6.387)
6	LXT	59-85	0.9655	1.89	1.16	X	0.312	0.720	-1.161					1.395									
							(0.170)	(4.244)	(-3.097)					(1.337)									
7	LXLC	59-85	0.8728	1.70	11.35	X	4.449	0.788		0.644					-3.498								
							(1.146)	(3.142)		(0.843)					(-2.462)								
8	LXCD	59-85	0.8725	1.94	3.28	X	0.366	0.604			-0.103					0.917							
							(0.268)	(4.253)			(-0.195)					(1.741)							
9	LXIO	59-85	0.9644	1.88	1.06	X	-0.874	0.802				-1.534					0.335						
							(-0.335)	(3.551)				(-2.908)					(0.656)						
10	LXKO	59-85	0.9688	1.87	0.9	X	2.772	0.597					-1.132					0.636					
							(1.546)	(5.126)					(-2.953)					(1.717)					
11	LXT	58-85	0.9757	1.84	0.713	X	0.537	0.696	-0.929					1.556									
							(0.366)	(5.066)	(-2.782)					(1.924)									

	VD	PERIOD	R2-BAR	DW	RSS	AC	CONST	LWT	LPRXT	LPRXLC	LPRXCD	LPRXIO	LPRXKO	LDEST	LDESLC	LDESCD	LDESIO	LDESKO	LXT(-1)	LXLC(-1)	LCIO(-1)	LXIO(-1)	LXKO(-1)
12	LXT	58-73	0.9649	1.77	0.48		-5.465	1.291	-1.153					3.554									
							(-4.225)	(10.719)	(-3.350)					(2.353)									
13	LXT	58-73	0.9735	1.78	0.29		-3.744	1.148	-0.544					2.736									
							(-3.747)	(21.5407)	(-2.047)					2.736									
14	LXT	58-73	0.9618	1.83	0.48	X	-5.401	1.289	-1.161					2.345									
							(-3.557)	(17.215)	(-3.097)					3.473									
15	LXT	74-85	0.4671	1.99	0.06		2.338	0.214	0.147					(2.185)									
							(1.081)	(2.090)	(0.428)					1.092					0.416				
16	LXT	74-85	0.6761	2.28	0.03	X	3.834	0.398	0.552					(2.435)					(1.791)				
							(2.648)	(3.206)	(1.098)					1.587									
17	LXT	74-85	0.6761	2.28	0.03	X	3.834	0.398	0.552					(3.704)									
							(2.648)	(3.206)	(1.098)					1.587									
18	LXLC	58-73	0.7487	1.96	7.64		5.523	0.0079		0.735				(3.704)									
							(0.455)	(0.007)		(0.350)					-1.039					0.538			
19	LXLC	74-85	0.7100	2.29	0.08		2.050	0.126		-0.204					(-0.664)					(1.784)			
							(1.222)	(1.161)		(-1.075)					1.051					0.389			
20	LXCD	58-73	0.8284	2.30	1.59		0.411	0.341			0.514				(2.178)					(2.060)			
							(0.172)	(1.245)			(0.896)					1.282					0.501		
21	LXCD	58-73	0.7426	1.76	2.50	X	-1.583	0.842			-0.079					(1.201)					(1.937)		
							(-0.432)	(2.151)			(-0.105)					0.638							
22	LXCD	74-85	0.7740	2.01	0.13	X	0.429	0.624			-1.223					(0.526)							
							(0.173)	(2.364)			(-2.720)					1.079							
23	LXIO	58-73	0.9396	1.66	0.57		-2.768	0.943				-1.387				(2.513)							
							(-0.614)	(1.642)				(-1.222)					0.306						
24	LXIO	58-73	0.9550	1.83	0.49	X	-3.473	1.138				-1.968					(0.295)					0.290	
							(-0.907)	(3.854)				(-3.430)					0.353					(0.760)	
25	LXIO	74-85	0.9598	1.74	0.06	X	2.886	0.438				-1.804					(0.395)						
							(0.949)	(1.645)				(-3.088)					0.365						
26	LXKO	58-73	0.9795	1.61	0.35		-0.930	0.636					-0.180				(0.966)						
							(-0.420)	(1.877)					(-.652)					0.246					0.403
27	LXKO	58-73	0.9695	2.06	0.29	X	-1.617	1.052					-0.032					(0.519)					(1.258)
							(-1.014)	(17.138)					(-0.146)					0.413					
28	LXKO	74-85	0.5124	1.90	0.29		11.576	0.066					-1.363					(1.235)					
							(7.716)	(0.376)					(-1.252)					1.657					
29	LXKO	74-85	0.6994	1.60	0.13	X	9.147	-0.06					-0.86					(3.060)					
							(7.619)	(-0.420)					(-1.267)					0.499					
																		(1.204)					

LXT LOG OF MANUFACTURED EXPORTS
LXLCLOG OF EXPORTS OF LIGHT CONSUMPTION
LXCDLOG OF EXPORTS OF CONSUMER DURABLES
LXIOLOG OF EXPORTS OF INTERMEDIATE GOODS
LXKOLOG OF EXPORTS OF CAPITAL GOODS
LWT LOG OF WORLD TRADE
LPRXLOG OF RELATIVE PRICES OF MANUFACTURED EXPORTS=EXPORTS PRICE INDEX/WHOLESALE PRICE INDEX FOR DOMESTIC GOODS
LPRXLOG OF RELATIVE PRICES OF EXPORTS OF LIGHT CONSUMPTION=EXPORTS PRICE INDEX/WHOLESALE PRICE INDEX FOR DOMESTIC GOODS
LPRXLOG OF RELATIVE PRICES OF EXPORTS OF CONSUMER DURABLES=EXPORTS PRICE INDEX/WHOLESALE PRICE INDEX FOR DOMESTIC GOODS
LPRXLOG OF RELATIVE PRICES OF EXPORTS OF INTERMEDIATE GOODS=EXPORTS PRICE INDEX/WHOLESALE PRICE INDEX FOR DOMESTIC GOODS
LPRXLOG OF RELATIVE PRICES OF EXPORTS OF CAPITAL GOODS=EXPORTS PRICE INDEX/WHOLESALE PRICE INDEX FOR DOMESTIC GOODS

LDEST LOG OF DOMESTIC EXCESS SUPPLY=DOMESTIC SALES/CAPITAL STOCK
LDESLC LOG OF DOMESTIC EXCESS SUPPLY LC=DOMESTIC SALES/CAPITAL STOCK
LDESCD LOG OF DOMESTIC EXCESS SUPPLY CD=DOMESTIC SALES/CAXPITAL STOCK
LDESIO LOG DOMESTIC EXCESS SUPPLY IO=DOMESTIC SALES/CAPITAL STOCK
LDESKO LOG DOMESTIC EXCESS SUPPLY KO=DOMESTIC SALES/CAPITAL STOCK
LXT(-1) LOG OF MANUFACTURED EXPORTS LAGGED ONE PERIOD
LXLC(-1) LOG OF EXPORTS OF LC LAGGED ONE PERIOD
LXCD(-1) LOG OF EXPORTS OF CD LAGGED ONE PERIOD
LXIO(-1) LOG OF EXPORTS OF IO LAGGED ONE PERIOD
LXKO(-1) LOG OF EXPORTS OF KO LAGGED ONE PERIOD

To conclude our characterization of the export sectors we concentrate on two typical cases, namely textiles and clothing. The pace of labour productivity growth in the textiles sector (0.9%) lagged behind that of other developing countries (e.g. 13.6% in Korea) in the period 1968-74 126/. While sectoral prices fell relative to the manufacturing average in the countries which introduced innovations in the seventies, in Colombia prices increased. The clothing sector's low index of revealed comparative advantage and poor productivity growth compared to e.g. Korea show its poor competitive stance 127/. Morawetz (1979) concludes that despite Colombia's advantage over Asian competitors in terms of proximity to the United States market as well as governmental stimulus and lower salaries, productive inefficiencies (due to inferior organization, skill and discipline) imply lower labour productivity levels (between 30% and 50%) and inferior product quality 128/.

3.4.3.2. The impact of X's deterioration

We consider, at a sectoral level, two aspects of this impact: first, the evolution of X in the critical years 1974-75 and 1981-82; second, the contribution EX as a source of growth in the 1974-82 and 1978-82 subperiods. With regard to the declines in the first and second phases of the XM crisis, the sectors worst affected in 1974-75 were instruments and miscellaneous, chemicals, leather products and clothing, while in 1981-82, textiles, chemicals and instruments and miscellaneous suffered most (see Table 3.4-14) 129/. The only sector however that enjoyed substantial relative external demand -i.e. it has an exports coefficient above 10% in 1974-82- was leather.

In terms of the decline in the dynamic contribution of EX from 1967-74 to 1974-82 (after increases from 1958-67 to 1967-74) the X crisis badly affected IG (and KG for 1978-82) 130/. Acute falls in textiles, clothing, rubber products, and chemicals (Table A-3.4-1), require a sectoral qualification 131/ of the aggregate viewpoint that (section 3.2.), given the limited importance of EX as a source of growth, the X crisis did not significantly contribute to the demand problems of manufacturing:

this aggregate result fails to consider sectors in which the crisis contributed to demand problems 132/.

3.4.3.3. Econometric relations.

Table 3.4-15 shows: 1) The elasticities to the index of world trade are around 75% except for CD and KG 133/. 2) Relative prices have the expected significant positive influence only for LC and CD when lagged 134/. 2) The domestic excess supply variable has the expected negative sign only for LC; the positive influence for CD suggests, in accordance with evidence from a recent survey 135/, to reinterpret for CD the ratio of domestic sales to the capital stock as an increasing returns index. 3) The analysis of changes from 1958-73 to 1974-85 point to a deterioration in the influence of the world trade index for all cases (except for CD), while the sign of relative prices changes towards the expected one for the aggregate.

3.5. CONCLUSION

We started our analysis of the deterioration of demand conditions for industrial production by focusing on the association of some processes related both to the growth and the distribution of income, and to movements in domestic relative prices with the stagnation of domestic demand for manufacturing. The analysis of the distributional changes pointed to the following income transfers towards social groups with lower propensities to consume manufactures: From industrial workers to capitalists, as a result of the increase of the mark-up in the first half of the seventies. From urban middle income groups to rural low income, and to coffee exporters as a result of the coffee exports boom in the middle of the seventies. The analysis of the effect of income growth and of terms of trade with agriculture, pointed to other processes also associated with the Dutch disease syndrome linked to that boom. The demand impact on manufacturing of the

extraordinary revenues was limited by policies including both the distribution of these revenues, and contractionary fiscal and monetary policies. In the same direction operated the accelerated increase in the price of food, and in general agricultural products, resulting from the policy of increasing the domestic coffee price and other supply and demand factors.

The econometric investigation of the determinants of domestic demand provided support for some of these hypotheses as follows. The influence of GDP and of money supply on domestic demand for manufactures (and particularly for production goods), confirms the role of income expansion and the monetary instruments for its control. Specially clear in this respect is the effect of long-term credit upon the demand for KG. The influence of the concentration of income in favour of profits and of the prices relative to food upon domestic demand for LC confirm, respectively, the operation of the underconsumist and neostructuralist income effects, although the latter dominates the orthodox substitution effect only when introduced in a dynamic lagged fashion.

Shifting to the foreign trade performance, we start by recapitulating the implications of our analysis of the determinants of the M expansion and the X deterioration. The econometric results confirm the general hypothesis of the crucial role of the size of the market. More specifically, these results suggest that while accelerations in GNP growth contributed to the expansion of M, contractions in world trade contributed to the slowdown of X growth. The general hypothesis underlying the role of the rate of devaluation, i.e. the influence of relative prices is not equally confirmed. However, these may be important in the case of M of IG and X of consumption goods. With regard to other specific hypothesis, the consistent influence of quantitative controls in the case of imports suggest a contribution of their reduction to the M expansion. For the excess supply index, although it has the expected influence in the case of LC, it is doubtful that competition from domestic demand had contributed to the X the deterioration.

The consideration of movements in the determinant factors associated with expansions of M suggest that increases in the growth of aggregate income and the reductions in quantitative controls decisively contributed to them. In particular, while the expansion of income associated with the coffee boom appears to have been crucial for the M expansion at the end of the seventies, the deepening of the liberalization process by the Turbay government seems to have been a determinant of further import growth at the beginning of the eighties. As for the movements in determinant factors associated with the decreases in X, the slowdowns in international markets appears to have been crucial for both those of the middle of the seventies and the beginning of the eighties.

The apparently weak contribution of relative prices deserves special consideration. In the case of imports the statistical insignificance is not only a matter of econometric problems of aggregation or dynamic specification. This lack of a consistent influence must be due to the complementary structure of Colombian M, as well as to the impact of the quantitative controls regime and its modifications. Of course, this does not imply that relative prices do not matter, but that the influence of their movements has been mediated by these two characteristics of the Colombian setting. As for exports, it seems relative prices may have played a role during the eighties. The specific evidence considered for 1981 is consistent in this respect with the results of other recent estimations which suggest an increased influence of the real exchange rate during this decade.

Finally, we concentrate on the problem of the contribution of the X deterioration and the M expansion for the erosion of demand for manufacturing. In relation to the former we consider specific evidence of an harmful effect, particularly in some IG sectors (i.e. textiles and chemicals). Meanwhile, the evidence concerning a competitive effect of the M expansion is not conclusive. On the one hand, the econometric results point to this kind of effect in the case of the aggregate and of CD, but not for the rest of subaggregates. Similarly, specific evidence of substantial increases of competitive imports in textiles and some branches

of CD and KG was presented. On the other hand, both the consideration of a transformation of the structure of M and the lack of significance of relative prices points to the absence of a general effect.

APPENDIX

A.3.1. K-S STAGNATIONIST ARGUMENT.

Substituting for the equilibrium value of u in the investment function (equation 3.1.5.] we obtain for the equilibrium level of g

$$g = \frac{i_o \, s_\pi}{(s_\pi - i_\pi) - (i_u/m)}$$

showing how , given Steindl´s condition ($i_u>0$), an increase in m implies a fall in g, and so stressing how it is via the reduction in u that the increase in m results in the fall in g. Now, in order to determine π we can go through either the realization curve or the profits function (Rowthorn. 1980). In the first case we emphasize Kalecki´s realization theory of profits, i.e. from his "the capitalists get what they spend" ($\Pi = I + C_K$), and introducing the g^I function (equation 3.1.5.), we obtain

$$\pi = \frac{i_o}{(s_\pi - i_\pi)} + \frac{i_u}{(s_\pi - i_\pi)} u$$

This tells the rate of profit which can be realized at any level of capacity utilization, without either excess supply or excess demand (Rowthorn, 1981). This curve is shown as R in the SE quadrant, which is the locus of the macroequilibrium points of the quadrant SW, but in the u-π space. Substituting for the level of utilization determined by macrodemand conditions we obtain

$$\pi = \frac{i_o}{(s_\pi - i_\pi) - (i_u/m)}$$

which is the same we would obtain via the profits function (from u to π through the Π curve in quadrant SE) substituting for that level of utilization in π=mu. The fact that only if Steindl´s condition is satisfied will an increase in m imply a fall in π ($d\pi/dm < 0$ iif $i_u > 0$), stresses how (in Kaleckian manner) it is via the reduction in investment expenditure that the drop in u associated with an increase in m results in a fall in π. Let us clarify the mechanics underlying this comparative statics analysis, with the help of quadrants SW and SE, where the increase in m is shown as a shift of the S function in SW from S_1 to S_2 and a shift of the Π function in SE from Π_1 to Π_2. In point 1´ we have the situation of excess supply disequilibrium arising from the failure of the increase of capitalists expenditure to match the fall in workers expenditure. 1´´ in the SE quadrant depicts the situation in which the resulting reduction in u has returned π back to its original level, i.e.

the Kaleckian case in which the increase in m is exactly compensated by the fall in u. Meanwhile 1´´ in the SW quadrant relates to the situation in which investment has not reacted to this fall; in other words, in 1´´we have the situation in which investment has not reacted to this fall, i.e. the situation which would be obtained if $i_u = 0$ and I in SW as well as R in the SE would be parallel to the u axis. However, given Steindl´s condition, investment expenditure must start falling, and this reduction is what keeps u falling beyond u´´. Thus, from 1´´ to 2 in the SW quadrant we have a short period adjustment version of Steindl´s familiar stagnationist reduction of I as a result of the drop in u, followed by an additional drop in u stemming, in turn, from that reduction, which manifests itself in the reduction of π from π_1 to π_2 in the SE quadrant.

Let us conclude by making a comment concerning Dutt-Taylor´s presentation. We refer to it because we will follow it both in this section and in the following sections where we will add an agricultural and an external sector. They express the term in u in the investment function in reduced form, i.e.

$$g^I = i_o + (i_\pi + i_u/m)\pi$$

Thus they obtain the macroequilibrium levels of g and π from the combination of this and the saving function $g^S = s_\pi\pi$ as is illustrated in the NE quadrant by the intersection of curves I and S. Their comparative static analysis of the consequences of an increase in m is represented by the shifts in function I from I_1 to I_2 in NE, and (although in Taylor 1983, for the opposite case) in function Π from Π_1 to Π_2 in SE, bringing down π from π_1 to π_2. Now, although DT´s presentation lends itself more easily to the analysis of the problems which we are going to tackle in sections 3.1.2 and 3.1.3. the presentation here, and that of Rowthorn (1981), are more powerful in conveying the causal elements of the underlying KS economics. In particular, it must be clear that when Dutt argues that their specification of the I function states that "a rise in π will increase I both directly and through an implied increase in the utilization rate" (1984. p.29), he is confusing the most basic elements of KS analysis which we have been emphasizing: namely, that in the exploitation sphere causality runs from u to π (and not the other way around), and that it is not π which influences I through u but vice versa . Having noticed this point and so having properly set the building blocks of our stagnationist argument in a comparative statics framework, it is worth referring to its presentation by DT in a dynamic framework. In particular, Dutt´s analysis of a stagnating economy as a result of great inequality in income distribution provides a relevant dynamic formalization of Steindl´s cumulative causation argument about the deterioration of the dynamics of investment caused by a high level of the markup 136/.

A.3.2. STRUCTURAL CONFLICTIVE CLAIMS INFLATION

Let us characterize the locus $\hat{\theta}=0$ along which the terms of trade remain constant, taking into account that

$$\hat{\theta} = \hat{p}_a - \hat{p}_m$$

Point b (Figure 3.1.3.) belongs to such a set since the food market is in equilibrium ($\hat{p}_a=0$) and workers have their desired

real wage ($\hat{p}_m=0$), although there q_m is increasing in response to the excess demand for M. Thus we look for a second point of the locus $\hat{\theta}=0$ somewhere in between two extremes: on one side point a where both markets are in equilibrium ($\hat{p}_a=\hat{q}_m=0$) but p_m is rising (θ is falling) as a result of wages reaction to $\theta>\theta^*$; and on the other side point f where the M market is in equilibrium ($q_m=0$) and there is no wage inflation ($\hat{p}_m=0$ because $\theta=\theta^*$), but p_a is rising (θ is rising) in response to the excess demand for A. Hence the economy must move toward e from either side as follows. From a it will move toward c as long as the upward effect upon θ of the increase in p_a in response to the excess demand in A generated (through substitution effects) by the fall in θ stemming from the wage inflation does not compensate for this original downward pressure upon θ; then at, say, d θ ceases to fall, but the excess demand in the M market keeps pushing the economy upwards 137/ until it finally reaches the locus $\hat{q}_m=0$ at e. From f as long as the decreasing effect upon θ of the increase in p_m ensuing from the wage reaction to the increase in θ (p_a) does not compensate for this original reaction to the deterioration of the terms of trade, in a movement, which includes a downwards component expressing the elimination of the excess supply in the M market, and which ends up at e 138/.

When the manufacturing sector demands agricultural output as input, the pricing rule in the M sector becomes

$$p_m = (1+\mu)(Wl+p_a a)$$

where a is the technical coefficient of A requirements per unit of output of M. Then, as we saw in note 2, the share of profits in income is given by

$$m = \frac{\mu}{1+\mu-\tau}, \quad \text{where} \quad \tau = \frac{p_a a}{Wl + p_a a}$$

so that CD is now

$$CD = c_a p_a q_a + c_m(p_m - p_a a)q_m$$

and the conditions for supply-demand equilibrium in the markets for A and M are

$$p_a q_a = \delta CD + \phi p_a + p_a a q_m \qquad p_m q_m = (1-\delta)CD - \phi p_a + p_m I$$

Hence the excess demand functions become

$$EDM = -q_m[1-c_m(1-\delta)] - \theta q_m(1-\delta)ac_m + \theta\,[c_a q_a(1-\delta)-\phi] + I$$

$$EDA = q_m\,\delta c_m + \theta q_m[a(1-\delta c_m) - \theta\,[q_a(1-\delta c_a)-\phi]$$

The additional term $\theta q_m[a(1-\delta c_m)$ in the second one expresses the extra pressure upon the inelastic agricultural supply. Let us then consider the implications of this extra pressure both before wages reaction takes place, and in their recovering their purchasing power. Thus, as for the initial situation we want to stress three points. First, the very existence of the equilibrium hinges on there being a sufficient agricultural supply to meet the now increased needs 139/. Secondly, the conditions of stability become more stringent; in effect, the Jacobian matrix is now

$$\begin{vmatrix} -[1-(1-\delta)c_m+\theta(1-\delta)ac_m] & q_a(1-\delta)c_a-\phi-q_m(1-\delta)ac_m \\ \delta c_m + \theta[a(1-\delta c_m) & -[q_a(1-\delta c_a)-\phi-q_{ma}(1-\delta c_m)] \end{vmatrix}$$

The trace is negative as long as q_a is enough to supply the autonomous consumption of A and the input of it required for the production of q_m , since (as an approximation) it implies $q_a(1-ac_a)>\phi+q_{ma}(1-ac_m)$. As for the determinant, it will be positive, if

$$[1-(1-\delta)c_m+\theta(1-\delta)ac_m][q_a(1-\delta c_a)-\phi-q_{ma}(1-\delta c_m) > [\delta c_m + \theta a(1-\delta c_m)][q_a(1-\delta)c_a-\phi-q_m(1-\delta)ac_m]$$

This states a more stringent condition in comparison with that of the previous case: its fulfilment hinges on a supply of q_a sufficient to meet a demand which now includes inputs for the production of M 140/. Finally, with regard to the comparative static analysis we considered in the previous case, the contractionary impact upon q_m of a fall in q_a is more severe 141/ as a result of the negative income effect now involving the two prices; this is so during the adjustment process illustrated by the comparative static result because now workers' purchasing power is behind both prices with the reaction of p_m to the increase in p_a preceding that of w.

Thus, it can be seen how, as in the previous case, at the new equilibrium the rate of growth of p_m reaches the increased level of that of p_a. As for the direct effect of the latter upon the former, assuming again a constant markup, we have

$$\hat{p}_m = \beta_1 \hat{W} + \beta_a \hat{p}_a$$

with β_1 and β_a being respectively the share of labour and A input in variable costs. So that the effect on the terms of trade growth becomes

$$\hat{\theta} = \beta_1 (\hat{p}_a-\hat{W})= \beta_1 (\hat{p}_a- \epsilon(\theta-\theta^*))$$

and the rate of inflation becomes

$$\hat{p} = [\alpha+(1-\beta_1)(1-\alpha)]\hat{p}_a + (1-\alpha)\beta_1\hat{W}$$

From this it can be seen that if W grows at the same rate as p_a we have

$$\hat{p}_m = \hat{p}_a \; ; \qquad \hat{\theta} = 0 \; ; \text{ and } \qquad \hat{p} = \hat{p}_a$$

The adjustment towards this equilibrium with higher inflation hinges on the behaviour of $\epsilon(\theta-\theta^*)$. As for the conditions of a convergence of this dynamic process it can be seen that again, they depend upon the supply of A being sufficient to meet the two components of demand, as well as the sluggishness in the response of p_a to the excess demand in its market. The system has become

$$\hat{q}_m= f\{-q_m[1-c_m(1-\delta)] - \theta q_m(1-\delta)ac_m + \theta [c_a q_a(1-\delta)-\phi] + I\} = 0$$

$$\hat{\theta}= \beta_1 \{ g \{q_m \delta c_m+\theta q_m[a(1-\delta c_m)-\theta[q_a(1-\delta c_a)-\phi]\} - \epsilon(\theta-\theta^*) \} = 0$$

so that the Jacobian matrix is

$$\begin{bmatrix} f\{-[1-(1-\delta)c_m+\theta(1-\delta)ac_m]\} & f\{q_a(1-\delta)c_a-\phi-q_m(1-\delta)ac_m\} \\ \beta_1 g\{\delta c_m+\theta[a(1-\delta c_m)\} & \beta_1\{g\{-[q_a(1-\delta c_a)-\phi-q_m a(1-\delta c_m)]\} - \epsilon\} \end{bmatrix}$$

The negative trace condition is: $q_a(1-\delta c_a)>\phi+q_m a(1-\delta c_m)-\epsilon/g$
And the positive determinant require (using Γ an Ω to simplify):

$q_a[\Gamma(1-\delta c_a)-\Omega c_a(1-\delta)] > q_m[\Gamma a(1-\delta c_m)-\Omega(1-\delta)ac_m]+\phi[\Gamma-\Omega]-\Gamma(\epsilon/g)$
this which states a more stringent condition than that of the previous case.

A.3.3. DUTCH DISEASE

1. TWO BALANCES FRAMEWORK

To concentrate on the working of the impact of an increase of b with u and e as the adjustment variables let us totally differentiate equations 3.1.15. with respect to b. Thus (setting $dp_1^x=dg=0$) we have

$$\frac{-s_\pi\mu\ du}{1+\mu\ db} + \frac{h\ de}{e\ db} - e = 0$$

$$-\frac{h\ du}{udb} + \frac{u\epsilon_o\ de}{e\ db} - e = 0$$

or

$$\begin{vmatrix} \frac{-s_\pi\mu}{1+\mu} & \frac{h}{e} \\ \frac{-h}{u} & \frac{u\epsilon_o}{e} \end{vmatrix} \begin{vmatrix} \frac{du}{db} \\ \frac{de}{db} \end{vmatrix} = \begin{matrix} e \\ e \end{matrix}$$

with $h = e[(1-\sigma)p_k^x g-b]$

So that the trace of the Jacobian matrix is negative, and its determinant, i.e. $h^2/ue - (s_\pi\mu u\epsilon_o)/(1+\mu)e$, is positive if $\epsilon_o<0$; in other words stability requires this export optimist assumption. With regard to the effect of the increase in b on u and on e, we have

$$\frac{du}{db} = \frac{u\epsilon_o/e - h/e}{h^2/ue-(s_\pi\mu u\epsilon_o)/(1+\mu)e}$$

$$\frac{de}{db} = \frac{h/u - s_\pi\mu/(1+\mu)}{h^2/ue-(s_\pi\mu u\epsilon_o)/(1+\mu)e}$$

The first equation expresses how the contraction effect takes place as long as $h>u\epsilon_o$, and the second shows how an appreciation requires $h/u<s_\pi\mu/(1+\mu)$. This means that, the Dutch Disease syndrome with its mechanisms of contraction of the level of production and appreciation of the rate of exchange crucially depends on h being within the range given by

$$us_\pi\mu/(1+\mu) > h > u\epsilon_o$$

expressing the stringent condition of the excess of exports over the imports of intermediates having to be smaller than domestic savings, at the same time as being greater than the exogenous part of exports.

To consider the mechanics of this adjustment process, let us restate the internal and external balances as

$$[\sigma/e+(1-\sigma)p_k^x]g - [s_\pi\mu/(1+\mu)e]u - b = 0$$

$$[(p_i^x a-\epsilon_i p^x)-\epsilon_o/e]u + p_k^x(1-\sigma)g - b = 0$$

Thus, the first equation illustrates how the maintenance of the internal balance requires (e remaining constant) the rise in b to be compensated for by a fall in u; i.e. the rise in foreign saving implies an excess supply situation which must be eliminated by this fall. The second equation shows how the maintenance of the external balance requires (u remaining constant) the rise in b to be compensated by a fall in e; i.e. the reduction in the excess demand for foreign exchange implies a fall in the exchange rate. Let us look at it graphically (Figure 3.1.4.). We have for the internal balance

$$u = \frac{\sigma g}{s_\pi\mu/(1+\mu)} + \frac{e[(1-\sigma)p_k^x g-b]}{s_\pi\mu/(1+\mu)}$$

which shows how an increase in b manifests itself in a clockwise rotation of IB, which is positively sloped as long as $h>0$. As for the external balance, we have

$$u = \frac{-b + (1-\sigma)p_k^x g}{-(p_i^x a-\epsilon_i p^x)+\epsilon_o/e}$$

which shows how an increase in b manifest itself in a downward shift of XB, which is an hyperbola, negatively sloped as long as $h>0$ and $\epsilon_o<0$ 142/.

2. MACROECONOMIC FRAMEWORK.

From national income identities, we have for net acquisition of

financial assets in terms of the government budget constrain:

$$\Delta \phi = \Delta H + \Delta D = G - T + X + Q_a - M$$

where D is the stock of government bonds. From policy rules about net foreign lending and financing domestic budget deficits we have for the change in the supply of high-powered money

$$\Delta H = \Gamma(G-T) + \Omega(X+Q_a-M)$$

where Γ and Ω are parameters expressing those rules. And for the demand for real balances we have

$$H/p = h(\alpha+g,\ i) \qquad \text{with } h_1<0$$

So that equilibrium in the money market can be written as

$$h(\alpha+g,\ i) = H_{-1}/p + \Gamma(g-t) - \Omega(b)$$

where t is real taxation.

Let us then summarize the main results which can be obtained with the model as far as the impact of an increase in A is concerned. With regard to the short period, although the impact on q of such an increase is, with given fiscal policy, positive, it is rather limited. In particular, the effect through the impact of a fall in the rate of interest as a result of the increase in the money supply implied by the reduction in national debt made possible by the increase in taxes, crucially depends on the management of g,t, Γ, and Ω, as well as on the interest elasticity of private absorption (α_1).

On the other hand, as we move into the long period by allowing the assets position to alter, the analysis is carried out in terms of the external and the internal (or public) balances. With θ and θ_a being the tax rates of the manufacturing and the A exporter sectors, respectively, we have

$$\delta A + x(\delta) - \delta m(y,\delta) = 0$$

$$g - \theta y - (\theta_a - \theta)\delta A = 0$$

These are the steady state conditions for full internal and external balance, which the introduction of variations in δ (through changes in money wages and/or the exchange rate) allows us to pose instead of the matching of one balance deficit with the other one surplus imposed by rigid post tax real wages. Thus, focusing on the adjustment of δ and y as a result of the increase in A we can see (Figure 3.1.6.) that y falls in so far as δ declines, and that in this case only an increase in g or a fall in the θ can avoid that fall. In particular, an increase in g-t is needed in order to avoid a fall in q.

A.3.4. TABLES.

TABLE A.3.4-1.
SOURCES OF GROWTH BY SECTOR
SUBPERIODS (Percentages)

SEC.	PERIOD	P(1)3/	dP4/	A.1/ Contribution to growth CGDD	CGIS	CGX	Rate of Growth	B.2/ Dynamic contributions DCDD	DCIS	DCX
20	1958-1967	8008	4766	85	8	7	4.96	4.21	0.39	0.34
	1967-1974	12774	4666	92	-3	11	4.95	4.55	-0.13	0.53
	1974-1982	17440	6985	99	-14	13	3.79	3.76	-0.53	0.51
	1982-1987	24425	12006	89	13	0	8.51	7.58	1.10	-0.04
21	1958-1967	3403	776	97	4	0	2.54	2.46	0.09	0.00
	1967-1974	4179	2297	103	-3	0	5.06	5.20	-0.18	0.01
	1974-1982	6477	4213	101	-1	0	8.20	8.31	-0.07	0.00
	1982-1987	10690	1676	90	10	1	2.18	1.97	0.21	0.02
22	1958-1967	743	128	94	6	0	2.49	2.35	0.15	0.01
	1967-1974	871	657	99	-1	0	5.71	5.68	-0.03	0.02
	1974-1982	1528	-455	-61	-37	-1	-2.86	-1.74	-1.06	0.04
	1982-1987	1073	379	64	48	-1	4.32	2.75	2.08	-0.04
23	1958-1967	3571	2030	90	10	1	4.60	4.13	0.46	0.04
	1967-1974	5601	3146	76	-2	26	8.26	6.28	-0.19	2.16
	1974-1982	8746	-939	-30	-24	-49	0.16	-0.05	-0.04	-0.08
	1982-1987	7807	1966	84	4	13	2.41	2.02	0.09	0.32
24	1958-1967	1475	525	99	-1	1	3.56	3.52	-0.05	0.03
	1967-1974	2000	656	13	-15	100	5.22	0.66	-0.80	5.23
	1974-1982	2656	2282	84	1	16	7.99	6.68	0.11	1.30
	1982-1987	4938	2183	98	-5	6	6.49	6.36	-0.32	0.42
25	1958-1967	428	5	-1401	535	946	1.39	-19.48	7.44	13.16
	1967-1974	434	135	74	-6	32	3.50	2.58	-0.19	1.11
	1974-1982	569	156	134	-19	-13	1.67	2.25	-0.32	-0.22
	1982-1987	725	188	88	24	-12	6.33	5.58	1.52	-0.77
27	1958-1967	344	1088	46	48	8	16.53	7.68	7.87	1.37
	1967-1974	1432	2267	96	8	-3	13.58	12.97	1.05	-0.37
	1974-1982	3698	592	116	-31	20	3.60	4.16	-1.11	0.72
	1982-1987	4291	1780	76	24	2	5.51	4.20	1.30	0.09
28	1958-1967	451	644	103	-3	2	9.65	9.97	-0.33	0.19
	1967-1974	1096	595	100	-24	15	-12.81	-12.81	3.11	-1.98
	1974-1982	1691	56	74	-153	191	15.83	11.66	-24.28	30.23
	1982-1987	1746	3	-7792	2002	5962	1.30	-101.52	26.09	77.69
29	1958-1967	504	3	-1275	-66	1436	1.70	-21.73	-1.13	24.47
	1967-1974	507	76	25	-3	78	1.44	0.36	-0.04	1.13
	1974-1982	583	237	82	-12	29	4.95	4.03	-0.57	1.44
	1982-1987	819	136	-27	2	125	1.69	-0.47	0.03	2.12

1/ Growth contributions
CGDD: domestic demand
CGIS: import substitution
CGX: exports

2/ Dynamic contributions
DCDD: domestic demand
DCIS: import substitution
DCX: exports

TABLE A.3.4-1
SOURCES OF GROWTH BY SECTORS
SUBPERIODS (Percentages)

Continuation

SEC.	PERIOD	P(1)3/	dP4/	A.1/ Contribution to growth CGDD	CGIS	CGX	Rate of Growth	B.2/ Dynamic contributions DCDD	DCIS	DCX
30	1958-1967	448	535	74	18	9	9.60	7.10	1.77	0.85
	1967-1974	984	1115	99	0	1	9.70	9.56	-0.05	0.14
	1974-1982	2099	384	150	-40	-11	3.63	5.45	-1.47	-0.40
	1982-1987	2483	-173	-208	-86	-17	-1.34	-2.80	1.15	0.23
31	1958-1967	1612	3747	65	31	2	13.17	8.56	4.06	0.24
	1967-1974	5359	5389	104	-16	11	9.90	10.28	-1.55	1.09
	1974-1982	10747	3854	80	23	0	5.52	4.42	1.26	-0.02
	1982-1987	14601	8781	85	4	12	8.64	7.32	0.30	1.01
33	1958-1967	1153	1040	69	24	9	6.91	4.80	1.69	0.63
	1967-1974	2193	1324	88	-4	14	6.54	5.78	-0.23	0.94
	1974-1982	3518	730	87	6	6	3.44	2.97	0.21	0.20
	1982-1987	4248	1793	85	7	8	7.95	6.79	0.54	0.66
34	1958-1967	1394	1030	35	63	1	3.71	1.30	2.33	0.05
	1967-1974	2424	-21	-2439	-2954	-268	-0.06	1.47	-1.78	0.16
	1974-1982	2403	1168	133	-19	-5	3.04	4.05	-0.56	-0.15
	1982-1987	3571	637	-47	94	51	5.93	-2.76	5.56	3.00
35	1958-1967	677	1240	78	22	2	12.17	9.49	2.72	0.26
	1967-1974	1917	1724	87	1	11	8.34	7.29	0.10	0.90
	1974-1982	3641	137	803	-695	10	2.89	23.19	-20.08	0.28
	1982-1987	3777	655	-7	121	-10	1.40	-0.09	1.69	-0.14
36	1958-1967	186	232	14	84	16	9.09	1.29	7.61	1.45
	1967-1974	420	2072	35	63	11	27.73	9.72	17.49	2.99
	1974-1982	2492	1338	134	-33	0	7.14	9.59	-2.32	-0.03
	1982-1987	3829	236	49	67	-21	2.27	1.11	1.53	-0.48
37	1958-1967	361	1082	26	81	1	15.75	4.05	12.82	0.17
	1967-1974	1443	735	92	-12	10	5.30	4.87	-0.62	0.53
	1974-1982	2177	2072	127	-25	3	10.61	13.48	-2.63	0.32
	1982-1987	4249	1104	36	58	2	3.72	1.33	2.16	0.09
38	1958-1967	460	645	97	-19	0	9.14	8.90	-1.70	0.00
	1967-1974	1104	3896	64	32	2	19.51	12.43	6.21	0.46
	1974-1982	5000	584	433	-342	5	3.24	14.02	-11.06	0.18
	1982-1987	5584	1519	-9	94	-2	4.89	-0.45	4.61	-0.11
39	1958-1967	362	632	109	2	-4	10.34	11.27	0.20	-0.43
	1967-1974	994	1828	62	10	22	12.64	7.81	1.20	2.82
	1974-1982	2822	3288	95	-1	9	11.70	11.07	-0.14	1.05
	1982-1987	6110	6613	90	14	-1	12.51	11.31	1.76	-0.13

SOURCE: AUTHOR'S CALCULATIONS WITH DATA FROM DANE AND BANCO DE LA REPUBLICA.

TABLE A.3.4-2

INCOME DISTRIBUTION-GINI COEFFICIENT

DECILES
(Percentage Income)

		1 to 5 Poorest 50%	6 to 8 Medium sectors	9 Medium high	10 High	GINI Coefficient
I. Individual distribution						
a. Excluding agricultural residents in cities						
	1964	19.0	26.0	14.5	40.5	0.48
	1971*	13.5	26.0	17.0	43.5	0.54
b. Including all urban residents						
	1970*	15.9	25.8	14.9	43.4	0.52
	1976	16.9	25.5	15.5	42.1	0.51
	1978	19.0	25.8	15.2	40.0	0.48
	1980	21.2	26.5	15.2	37.1	0.45
	1983	21.6	27.4	15.8	35.2	0.48
	1985	21.8	26.5	15.3	36.4	0.45
II. Family Distribution						
	1967-68	19.4	26.4	16.1	38.1	0.47
	1971	18.0	27.7	17.1	37.2	0.49
	1972	16.3	26.3	16.9	40.5	0.52
	1974	18.9	26.8	16.6	37.7	0.48
	1976	16.9	27.4	17.1	38.6	0.50
	1978	17.8	27.5	16.7	38.0	0.48
	1980	18.9	28.5	17.2	35.4	0.46
	1983	18.9	28.8	16.9	35.4	0.46
	1985	18.6	28.2	17.1	36.1	0.47

SOURCES:

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* Does not include income adjustment in goods for domestic services.

TABLE A.3.4-3
RESULTS OF THE UNIT ROOT TEST

A. LIGHT CONSUMPTION GOODS EQUATION: ANNUAL DATA

Variable	Dickey & Fuller	Augmented Dickey & Fuller	Sargan & Bhargava	Integration Order
lACLC	-0.007	-2.290	0.0300	I(1)
dlACLC	-5.944	-2.295	2.3140	I(0)
lQDLC	0.175	-2.434	0.0337	I(1)
dlQDLC	-7.150	-3.617	2.6569	I(0)
lYD	-2.232	-1.582	0.0152	I(1)
dlYD	-2.973	-2.862	0.9648	I(0)
lPRCLC	-1.796	-1.684	0.5205	I(1)
dlPRCLC	-5.404	-2.496	2.1987	I(0)
lPRMLC	-2.151	-1.830	0.5676	I(1)
dlPRMLC	-5.307	-2.600	2.1490	I(0)
lPRALC	-0.481	-1.327	0.1646	I(1)
dlPRALC	-8.188	-4.392	2.8779	I(0)
lEU	-3.104	-1.902	0.0159	I(2)
dlEU	-0.633	-1.628	0.7713	I(1)
lMT	-1.696	-2.372	0.1713	I(2)
dlMT	-1.696	-2.372	1.7690	I(1)
lQC	-1.881	-1.998	0.5060	I(1)
dlQC	-8.732	-2.081	3.0360	I(0)

B. WHOLE MANUFACTURING PRODUCTION EQUATION: ANNUAL DATA

Variable	Dickey & Fuller	Augmented Dickey & Fuller	Sargan & Bhargava	Integration Order
lACT	-1.775	-0.969	0.0273	I(1)
dlACT	-4.507	-2.736	1.7730	I(0)
lQD	-2.036	-1.803	0.0216	I(1)
dlQD	-4.579	-3.672	1.8084	I(0)
lCY	-0.207	-2.305	0.0650	I(1)
dlCY	-4.359	-2.397	1.7666	I(0)
lPRIPT	-0.535	-2.143	0.0986	I(1)
dlPRIPT	-3.734	-1.972	1.4242	I(0)
lRM1	-1.324	-1.360	0.0508	I(1)
dlRM1	-5.707	-2.682	2.3028	I(0)
lIQC1	-2.834	-2.810	0.9639	I(0)
dlIQC1	-6.320	-4.686	2.4982	I(0)
lATCR	-1.834	-0.773	0.1057	I(1)
dlATCR	-3.508	-2.222	1.3866	I(0)

NOTES OF CHAPTER 3

1. We assume a consumption-investment good is produced in this manufacturing economy, with two classes (capitalists and workers), and a passive money supply.

2. Although our main interest in this section is in the first link of this chain, i.e. the effects on demand and investment activity, we include the effect on profitability, both because it is necesary to understand the working of the model as a whole, and because this working embodies a cumulative causation mechanism linking further deteriorations in demand with the fall in investment brought about by the profitability decline.

3. With $u<1$ we assume away complications related to the alternative regime of full capacity utilization, where prices become determined by excess demand and π is greater than the function of μ which we introduced (Rowthorn 1980). At this stage we abstract from other complications which involved in subsequent sections. Other sectors (foreign or public) are introduced in sections 3.1.1.2., 3.1.1.3. and 3.1.2. Similarly, other costs, the behaviour of costs in the face of changes in utilization, and of markups and prices in the face of changes in input prices, are introduced in section 4.1.1. In particular, we assume here that there are no fixed costs and firms operate in the range of minimum unit costs (i.e. marginal and average costs are equal). We also assume that firms do not face surprises related to either input prices (i.e. product prices do not lag behind costs), or to demand (i.e. they operate at the expected level of u).

4. Our presentation of the multiplier side of that relationship follows Kalecki's integration of pricing and effective demand in an analysis which demonstrates the impact of exogenous changes either in capitalist expenditure or in the level of the markup both on the level and the distribution of income. This is expressed in the income and profit multipliers, i.e. (with exogenous investment) $\delta Y/\delta I=1/s_{\pi}m$, and $\delta \Pi/\delta I = 1/s_{\pi}$.

5. This results from the combination of two factors: on the one hand, firms do not have information allowing them to take the pricing and investment decisions needed to generate the level of effective demand necessary to satisfy their expectations; on the other hand, monopolistic conditions imply a higher μ than that justified by the level of I.

6. A presentation, within the monopolistic competition framework, of this Kaleckian contradiction between the conditions of exploitation for the individual capitalist and the conditions of realization for the capitalist class as whole can be found in Blanchard and Kiyotaki (1987). Despite differences in their emphasis on the monopolistic power of workers and the real balance effect as the mechanism linking prices and effective demand, they develop a general equilibrium analogue to the excess capacity argument (based on the lack of incentive for the individual firm to decrease its price) of the partial analysis. Not only would a decrease in prices by all firms increase aggregate demand, but also the consequent increase in the level of production (given the cost of changing prices) manifests

itself (the price being higher than the marginal cost) in higher profits.

7. The stability condition is more stringent than what is necessary for this stagnationist effect in that $du/dm<0$ requires only $(s_\pi - i_\pi)>0$. If either the assumption of $u<1$ or the stability condition does not hold the contractionary effect of the increase in m does not follow.

8. Any expansionist effect of an increase in m brings about a situation of instability, as can be seen by analyzing alternative exhilarationist arguments in which $du/dm>0$ as a result of a higher response of g^I than g^S to the increase in m (e.g. Taylor 1985 and Bhaduri-Marglin 1989).

9. This argument is more akin to the classical underconsumption in its concern for the narrowness of the internal market for manufacturing production as a result of the "poverty of the masses", than to the Latin American structuralist argument with its emphasis on the market for durables (See Lustig. 1980).

10. This is expressed in the change of the profits multiplier from $\Pi=I_o/s_\pi-i_\pi$ to $\Pi=I_o/[(s_\pi-i_\pi)-(i_u/m)]$

11. In Kalecki's (1971, 1976) and Harcourt's (1982) C-I (consumption-investment) models adjustments in prices and/or quantities in the C sector required by changes in the level of production of the I sector will result in full employment equilibrium only under extremely particular conditions. The problem of coordination of investment and pricing decisions implies in this two sector model that the maintenance of the level of activity requires entrepreneurs in the C sector to passively adapt their price and output decisions to the needs posited by the decisions of the entrepreneurs in the I sector Variations on this theme are to be found in Kregel (1973), and Minsky and Ferri (1984). Kalecki (1955) considers different possibilities in an outstanding synthesis of his reproduction schemes version of the principle of effective demand and what became the main themes of the Latin American structuralist analysis of the obstacles to growth in developing economies.

12. Cardoso refers to Latin American structuralists like Olivera, and Sunkel, but priority about various elements of the model should be given to Kalecki's two sectors analysis. Alternative presentations of Cardoso's model are found in Taylor (1983) and Correa (1986). Our initial presentation follows the latter.

13. We have, given $\delta c_m>0$: $[dq_m/d\theta]_{AA}>0$ iff $q_a>\phi+\delta c_a q_a$. The various conditions of stability which we will consider hinge upon similar statements implying sufficient agricultural supply.

14. We have: $dq_m/d\theta<0$ iff $\phi>(1-\delta)c_a q_a$. In the opposite case, strong substitution and Malthus (i.e. a high consumption of M by the landed classes) effects bring about increased demand for M.

15. Stability of this system of differential equations depends on the properties of the Jacobian matrix of the excess demand functions. We consider only conditions assuring local stability of differential equations for adjustment around an equilibrium

solution where time derivatives of state variables are equal to zero. For a two dimensional system the stability conditions are that the trace of the Jacobian matrix must be negative and the determinant positive. If these conditions are given, the adjustment process based on those state variables is locally stable. In this way, we use the Correspondance Principle by interpreting the restrictions from dynamic stability as those allowings us to carry out a meaningful analyis of the impact of a disturbance.

16. At equilibrium the excess demand functions become:
EDM: $(1-\delta)[c_a p_a q_a + c_m p_m q_m] - \phi p_a + p_m I - p_m q_m = 0$
EDA: $\delta[c_a p_a q_a + c_m p_m q_m] + \phi p_a - p_a q_a = 0$
which in our two adjustment variables gives the system
EDM: $-q_m[1-c_m(1-\delta)] + \theta\,[c_a q_a(1-\delta)-\phi] + I = 0$
EDA: $q_m\,\delta c_m - \theta\,[q_a(1-\delta c_a)-\phi] = 0$
It can be shown that the trace of the Jacobian matrix is negative. For its determinant to be positive the slope of the AA curve must be greater than that of the NN curve. This is always the case when the latter is negative as result of a strong Engel effect. Stability then hinges on sufficient agricultural supply.

17. For various comparative static analyses with this model see Taylor (1983), and Correa (1986). As for a shock adversely affecting the supply of food, the fall in q_a brings about a deterioration in the demand for M as a result of the consequent drop in agricultural supply along with a temporary excess demand for food, so that q_m falls while θ rises (which can be illustrated as the result of a clockwise shift in both AA and MM in figure 3.1.2.).

18. In other words, $\delta q_m/\delta q_a > 0$. It can be shown that this result assumes the considered dynamic stability conditions by applying the correspondence principle to determine comparative static results from dynamic stability restrictions.

19. We must introduce a methodological note concerning the relevance of this short period comparative static excercise. Although we are leaving a strictly dynamic analysis of this problem for section 4.1., the assumption of a lagged wage reaction allows us to use the comparative static result to illustrate the initial impact and the disequilibrium dynamics before the adjustment following the wage reaction is completed and the real variables return to their equilibrium levels with higher levels of inflation.

20. Barker (1981) emphasizes the alternative of investing the extraordinary revenues externally, and the competitiveness erosion brought about by revaluation. Noreng (1081) stresses the contribution of excess demand inflation to the competitiveness erosion. Corden Neary (1982) point to the substitution in expenditure of non-traded for traded resulting from the increase in the price of the latter, the contractionary effect on manufacturing (as traded) depending on public expenditure and monetary policies (Corden 1984). Pesaran (1984) emphasizes the ability of reductions in the rate of interest and fiscal esxpansion to compensate for the contractionary effect, and the contribution of wages inflation to the competitiveness erosion. Thirlwall (1980) stresses the alternative, under conditions of

excess capacity, of policies designed to increase utilization and use foreign exchange.

21. In all cases the foreign exchange inflow is treated as an external rent, i.e. we exclude any other supply mechanism e.g. production links or competition for inputs effects. In the first model which works with the two balances framework, it does not matter if the source of the foreign exchange is an export boom of the agricultural sector or a foreign exchange gift, in that the analysis hinges on the effect of the resulting deficit in the trade balance of the manufacturing sector.

22. The shift of purchasing power towards the non traded sector, as a result of the price increase which follows the demand rise (in the face of an inelastic supply) is a specific aspect of this shift. This can be considered within the last section strong Engel effect framework once we consider the increase in p_a as stemming from the demand increase due to the rise in income. Two more mechanisms are left aside. The expansion of competitive imports as a result of the liberalization of quantitative controls is considered in the next section. The monetary side of the story is beyond the scope of this section: for an analysis of Colombian coffee export boom focusing on the monetary inflationary aspect see Edwards (1985).

23. The value of consumption is

$$pC = Wlq + (1-s_\pi)\mu[Wl+Ep_1^*a]$$

The value in domestic currency of the trade deficit is

$$EB = Ep_1^*a + Ep_k^*(1-\sigma)I - [\epsilon_o+\epsilon_1(Ep^*/p)]pq$$

Thus for internal balance, saving-investment equilibrium (saving including domestic as well as the foreign saving expressed by the trade deficit) is:

$$[p\sigma+Ep_k^*(1-\sigma)]I - s_\pi\mu[Wl+Ep_1^*a] - EB = 0$$

Forthe external balance, zero excess demand for foreign exchange is:

$$[Ep_1^*a-\epsilon 1Ep_x-\epsilon op]q + Ep_k^*(1-\sigma)]I - EB = 0$$

24. Taylor's (1984) analysis of the impact of the Colombian coffee exports boom runs into problems when strictly applied to the manufacturing sector excluding other sectors. With regard to export optimism, although the real exchange rate elasticity of Colombian manufacturing exports seems to have developed from the midd eighties, it was not in place during the period considered. Neither were imports of intermediates less than exports in Colombian manufacturing. However, the assumptions are less dubious once other kinds of production (like bananas and flowers) whose industrial value added is limited to packing, are included.

25. Although we can not deal with this process with the equilibrium model we use here, we can intuitively illustrate the impact of imports liberalization by noting that imposing a limit on M is equivalent to imposing a limit on e (I am grateful to Hossein Samiei for his comment on this matter). Thus we have the typical switching regime situation of disequilibrium models if before the foreign exchange inflow this limit is binding, i.e. $e<e^*$, and as a result of this inflow e can reach its equilibrium level e^* (Figure 3.1.5).

26. Other features of Pesaran's model relevant to our analysis of the Colombian case are foreign exchange controls, different rates of taxation for oil and non oil income, and changes in oil income resulting in shifts in the balance of payments and the government budget. Here we apply the analysis to the case of an agricultural export.

27. This presentation involves much simplification and leaves aside the mathematical complexities of the original argument.

28. We assume that the only good consumed is industrial to avoid the complication of having (as in Pesaran's analysis) a consumer price index which is a linear combination of the industrial price and that of imports.

29. The nominal value of agricultural production is $Q_a=Ep_{ax}q_a$. Dividing by p we arrive at δA with $A=p_a{}^x q_a/p^x$. It is clear that $m_a<0$.

30. Their assumption of flex price cum supply determined level of production becomes relevant when demand expansion has pushed the manufacturing sector into the full capacity utilization regime. However, neither of the two models is entirely satisfactory for our analysis: the general equilibrium model of Corden Neary (1982) because its assumption of complete flexibility of prices and wages, and (consequently) full employment; and the disequilibrium model of Wijnberger (1984) because of its assignment of disequilibrium to the NT sector.

31. In Montenegro (1989) Wijbergen's model is applied to a coffee price boom by the addition of a coffee sector. This extension, the adjustments being illustrated in the $W/p_T-p_N/p_T$ space instead of the $W/p_N-p_N/p_T$ one facilitates the illustration of the profitability decline effect of T production. Without moving into the Malinvaud-Wijberger framework the increase in the real wage in terms of T goods is the result of the shift of the N equilibrium locus along a positively sloped wage indexation locus. (I am grateful to Santiago Montenegro for his comment on this matter). Kamas' (1986) application of Corden Neary to Colombia, relies mainly on the doubtful mechanism (for the case of unemployment and labour market segmentation) of the pull of resources to the booming sector.

32. The definition of the variables are at the end of this section.

33. See Thirlwall (198) and Kaldor (198) for applications of Harrod's original multiplier showing the adjustment of Y and then M as a result of increases in X proceeding as in Khan's adjustment of S to I in the closed economy.

34. In terms of the kaleckian multipliers introduced in the first part of the previous section we have that now profits are given by capitalists' expenditure plus the surplus in the trade balance: $\Pi=C_K+I-B$, i.e. $\Pi=(1-s_\pi)\Pi-mi/m\Pi+I+X$, where mi is the

imports propensity (M=miY). So that we have for the profits and the income multipliers: $d\Pi/dX=dX/[s_\pi/(mi/m)]$; $dY/dX=dX/(ms_\pi+mi)$

35. We concentrate on the case of X because of the role played by liberalization in the case of M; however, the analysis applies throughout to the latter too (simply substituting m for x to shift to the importables case).

36. This is illustrate in the first term in brakets of the following expression for changes in international competitiveness:
$d\delta = [p_x^x(Y^w,p^w)[(dEp_d-dp_dE)/p_d^2)] + [(E/p_d)(p_x^x{}_YdY^w+p_x^x{}_pdp^w)]$
with $p_x^x=p_x^x(Y^w,p^w)$ being the demand price for the exportable.

37. For given E and Y^w, we have for the effect of the growth in prices: $d\delta = \Gamma\, dp^w - \Omega\, dp^d$
with $\Gamma=(Ep_x^x{}_{pw})/p_d=d\delta/dp^w|_{dpd=o}$; $\Omega=(Ep_x^x/p_d^2=d\delta/dp_d|_{dpw=o}$
If we take margins as given to concentrate on the relative dynamics of wages vis a vis productivity:

$$\frac{d\delta}{dp_d} = \Gamma\,\frac{b_d^2}{b^{w2}}\,\frac{[(1+\mu^w)(dw^wb^w-db^ww^w)]}{[(1+\mu_d)(dw_db_d-db_dw_d)]} - \Omega$$

38. Scott, Corden and Little (1980) stress the omission of the reaction of prices of domestic substitutes, demand effects on wages, and the possibility of retaliation. The advantage of devaluation working also on the exports side and on the production cost (allocative inefficiencies) of protection, is epitomized by Corden's (1985) argument that CEPG's implicit assumption of a vertical supply of exports implies the elimination of that cost from the exports sector. He argues that CEPG's case is for taxing export profits to subsidize employment without decreasing wages.

39. Similarly, in a recent presentation which takes into consideration those criticisms Cristodoulakis and Godley (1986) point out that while currency realignment fails to break the vicious circle competitiveness decline-industrial stagnation, protection (conditioned to the degree of wage indexation and foreign retaliation) can do the trick. Given that M are at least in part competitive, under conditions of balance of payments restriction, both devaluation and protection foster the level production and employment; however tariffs and quotas have the advantage of not being inflationary and detrimental to wage income in the long run, and not bringing about the contractionary effects of the terms of trade deterioration in the short run, as is the case with devaluation.

40. Ocampo (1985) develops Hemming and Corden (1958) distinction (between a negative effect of import restrictions on absorption, which contributes positively to external adjustment, and an expansion effect, which worsens the external deficit) in the direction of effects on the level of demand.

41. i.e. demand falls short of their profit maximizing level of output given a non perfectly elastic export demand curve. Whereas in the domestic market for X consumers are never rationed (given that always it is produced enough to export after meeting domestic demand). we have two different set of conditions in its

foreign market, where demand depends negatively on the foreign currency price : in the case of a large supplier or a differentiated product, the domestic currency price is fix ; or, in the case of the small economy it faces a perfectly elastic demand at the fix foreign currency price. Figure 3.1.7 illustrates the different type of conditions in the foreign market for X which give rise to a situation of Classical or Keynesian unemployment: at $p_{xo}<p_x<p_x^w$ we have Classical unemployment, with p_{xo} being the price above which the X good becomes exportable, and p_x^w the price which clears the world market; at $p_x>p_x^w$ we have Keynesian unemployment. In this way the nature of foreign demand and whether foreign currency price is influenced by domestic supply conditions determines whether the economy falls into Keynesian or Classical unemployment. It falls into Keynesian unemployment if the foreign currency price is given by a domestic fix price and an overvaluated exchange rate, so that output is limited by foreign demand; it falls into Classical unemployment if, given perfectly elastic demand at the externally given price, output is limited because too high wages (relative to world prices and the exchange rate) make it unprofitable to increase output.

42. In the classsical case domestic production of both M and X is unaffected, with the fall in domestic demand for X being compensated for by an increase in sales abroad. Under Keynesian unemployment the trade balance unambiguously deteriorates; with Classical unemployment this is the case if the increase in domestic residents' expenditure on M exceeds that of foreigners'purchases of X. Devaluation stimulates production of X in the Keynesian unemployment regime, through the price elasticity of foreign demand (and the multiplier effect on the demand determined level of output), and in the classical one, through the price elasticity of domestic supply; the production of M remains unaffected, given government import restrictions and a pricing policy which insulates the imports competing sector from the effects of devaluation. The sign of the effect of devaluation on the volume of exports, depends on different conditions for each of the two unemployment regimes: in the Keynesian case it depends on the elasticity of foreign demand; and in the Classical case on whether or not the export supply curve is backward-bending.

43. In the classical case the benefits of emphasizing the importance of the relation wages-productivity for exports performance is gained by rendering protection totally irrelevant by means of an assumption about the elasticity of foreign demand of doubtful pertinence in the case of manufactures.

44. Although this impact operates through the effect of the ensuing excess demand for imports on either demand or supply, we are omitting here this latter effect of the rationing of inputs on the level of production in order to concentrate on the demand effect. As a matter of fact, in situations of Balance of Payments constraint, the general practice of Colombian authorities have been to keep imports controls from extending from consumption goods to intermediates.

45. Ocampo (1985) adds a disabsorption effect to the import substitution effect, representing the shift in the expenditure function brought about by the quota in : $Y = ED(Y, QC) + X$ ED being expenditure in domestic production and QC an index of quantitative controls which measures the excess demand for imports created by the quota (i.e. $QC=M^*-M^{QC}$). We have $dY = ED_Y dY + ED_{QC} dQC + dX$ where the term $ED_{QC} dQC$ measures the shift brought about by the change in QC. Like Ocampo we assume a demand determined level of output excluding supply restraints (like a rationing of imported inputs imposed by a balance of payments constraint). Another assumption (which is overlooked in Ocampo's presentation) is the exclusion of imports relative prices as an argument for foreign competition (besides import controls) in the domestic demand for domestic production function.

46. In Ocampo's presentation, if we assume a notional demand for imports of the form $M^*(Y)$, we have

$$dY = ED_Y dY + ED_{QC} M^*_Y dY - ED_{QC} dM^{QC} + dX$$

The magnitude of the term for the impact of import controls $ED_{QC}(M^*_Y dY - dM^{QC})$ depends on the size of the import substitution effect ED_{QC}, and the excess of the increase in import demand over the increase in the quota. When there is not disabsorption effect the term ED_{QC} will be 1, as can be seen if we consider the usual expression for the quota binding $Y = E(Y) + X - M^{QC}$ which after decomposition of demand and assuming complete substitution gives $Y = ED(Y) + M^*(Y) - M^{QC} + X$ or $Y = ED(Y) + QC + X$ where $ED(Y) + QC$ is the particular form of $ED(Y,QC)$ suitable for the case of complete substitution (null disabsorption).

47. From the analysis of the impact of the quantitative restrictions upon the volume of imports a paradoxical situation emerges concerning the relation of simultaneity imports-production. On the one hand, this volume has an impact on production only in the situation of excess demand for imports; on the other hand, in this situation the volume is determined more by the quotas than by the level of industrial production. Although the excess demand for imports can have an effect on production, the other side of the simultaneity relationship does not exist, because it is the cause of that excess demand -i.e the quotas- and not production which determines imports.

48. We make the following assumptions to extend the application of demand functions to demand for imports. First, we exclude monetary illusion (linear homogeneity of the function), which allows for the utilization of real income and the relative price of imports. Second, perfect supply elasticity avoids the simultaneity relationship between prices and quantities; the assumption of exogenously determined foreign prices allows the estimation of a single equation (Goldstein, Khan. 1986).

49. The distinction between relative price of supply and relative price of demand is introduced in CEPG (1975) and Goldstein, Khan (1976). It has been applied to the Colombian case by Echavarria (1982), and Villar (1984).

FEDESARROLLO
BIBLIOTECA

50. In CEPG (1975) supply is affected by unexpected demand movementgs, and in Goldstein Khan by domestic productive capacity.

51. Dealing with manufactured exports we add supply side determinants (i.e. the relative price of supply and a measure of the excess supply in the domestic market) to the demand factors which reflect that demand is not perfectly elastic (i.e. a measure of the magnitude of the foreign markets and the relative price of demand). We concentrate on supply factors influencing international competitiveness, i.e. on the determinants of the export price relative to that of competitors in foreign markets.

52. This is a model of price discrimination, in which a profit mazximizer oligopolist face a more elastic demand in the foreing market.

53. To simplify the illustration in Figure 3.1.10 we assume that prices react immediately to the increase in wages, so that the real income of consumers does not change; given linearly homogeneous demand function in income and prices this imply that the quantity demanded remains unchanges in the face of increases in wages and prices. We abstract here from complications emerging from the inflationary dynamics implied by wage indexation.

54. A simultaneous model is required when as a result of segmentation in exports markets the external price can not be assumed independent of exported quantities. We adopt here a simplification similar to a supply model with cost of creation of external market in which these costs are an inverse function of world imports (Villar 1985). CEPG (1975) introduces industrial production of importers and their import capacity as indicators of the buyers' market. Goldstein Khan introduce the income of importers, and Echavarria (1982) and Villar (1984) introduce world imports.

55. Taylor's (1984) analysis of the Colombian case is based on the export deterioration mechanism. The increase in the trade deficit required by the expansion of external savings takes place via X reduction without any rise in competitive M.

56. This is based on: $\Delta P = i\Delta DD+DD\Delta i+\Delta X$ where i is the coefficient of IS, i.e. $i=(P-X)/DD$, with $DD=P+M-X$.
Problems related to the contribution of IS arise using this method (see Sutcliffe 1971 and Garay 1975). An application to Colombia of the subsequent development (Chenery 1980) introducing the contribution of a technical change showed that this new factor lacks importance and its introduction does not alter the basic results presented here (Mendez, 1984).

57. Part A presents the percentage contributions to product growth (i.e. growth contributions) obtained by Chenery's method, which facilitate the comparison among the weights of the demand components within the same sub-period. Part B present the product of the growth contributions times the rate of grwoth of production (i.e. dynamic contributions), which facilitate the comparison between subperiods. The results for individual

sectors, which will be considered in section 3.4., are presented in Table A.3.4-1.

58. Its importance is emphasized by the increasing weight that its growth contribution acquired in compensating for the negative effect of the imports substitution reversal. After having its biggest relative weight for LC before 1967, it passed to have the greatest importance in the other subaggretates. This points to its role in industrial deepening.

59. Export deterioration converged with IS reversal in IG making growth more dependent on DD for this subaggregate; the inability of a stagnant DD unable to compensate is reflected in the low rate of growth of IG in 1974-82.

60. As oppossed to from 1958-67 to 1967-74 as it was the case for LC and IG.

61. The second section focuses on a concentration of income of the sort we considered in the kaleckian analysis of the impact of an increase in the markup in section 3.1.1.; while the third section concentrates on a shift of income which follows an increase in the price of food of the kind discussed in the neostructuralist analysis of section 3.1.2.

62. Sections 3.3.3. and 3.3.4. consider the sort of contractionary fiscal and monetary policies which we introduced as part of the Dutch disease syndrome in section 3.1.3.

63. Although with well known limitations (See Chica. 1980).

64. In fact this processes meant a deterioration in the conditions of poverty from 1966 to 1977 (Mision de empleo, 1986). Until 1977 the improvement in the relative conditions of lowest income groups was offset by the fall in industrial wages. As summarized by the food consumption per capita indicator, the deterioration of the conditions of poverty from the fifties to the sixties did not improve until after 1975 (Carrizosa 1986).

65. As a result of the different degree of concentration between labour and capital incomes, the functional distribution of income has an exceptionally high impact on family distribution in Colombia, i.e. the low participation of labour income is crucial for the structural concentration of the distribution of income. The concentration of capital income is such that the reduction in the dispersion of urban labour income (alongside the relative increase non qualified labour income relative to that of qualified industrial labour), did not improve the urban distribution (Urrutia 1984).

66. With regard to the acceleration of inflation an the initial sluggishness of wages, this acceletation was caused by a combination of the monetary impact of financing the massive fiscal deficit with foreign credit during the Pastrana government (1970-74), and the inflation of prices of imported inputs (first oil shock). The sluggishness of wages is considered in section 4.3.

67. This effect on demand (aggravated by the fall in exports) weakened the dynamics of output, and, therefore, that of employment. The consequent stagnation of the wage fund, due to the procyclical behaviour of industrial employment (see Guterman 1984. Reyes 1986) contributed to the deterioration of the conditions of demand.

68. Section 4.1. considers the profitability effect of the wage reaction to the increase in the price of food.

69. As a result of government policy producers received nearly 50% of the extraordinary incomes. One fourth of the additional income of the producers went to the workers (Leibovich 1984) whose daily earnings increased 38.23% in real terms from 1974 to 1977 (Cardenas et al 1985); therefore, the workers profited more than exporters and the government. Considering the whole period (Table 3.3-4.) the share of the government was low compared to the ustable share of the Coffee Federation and the consistently high share of producers. Although exporter's share was not high, it was substantial relative to the small size of the group in 1977 and 1978.

70. As for the low share of industrial goods in the consumption of farmers and rural wage-earners, these goods (excluding textiles) account for no more than 5% of the income of these groups, while this percentage fluctuates between 8% and 15% for the groups in the urban sector (Banguero 1981).

71. Saving generation required to finance the exports surplus did not follow the reditributive pattern of increases in the mark up vis-a-vis wages as it was the case in 1973. In 1977-78 worker's income was recovering from a previous severe deterioration. The adjustment of this period operated through the shifting of income to exporters and rural landowners. Similarly, the small government share forced a fiscal adjustment mainly through reducing public investment.

72. Conjunctural factors, i.e. climatic problems in 1977 and costs pressures stemming from rising input prices combined with structural conditions to produce a sluguish supply response.

73. Sarmiento (1984) stresses that the effect of the monetary stock on demand depends on the behaviour of agricultural prices. Londono (1985) point to the contractionary effect of agricultural supply problems and the expansive effect of the positive supply response upon urban activity in 1978. Lora and Ocampo (1986) show that reduced growth in food supply in the eighties (2.5% from 1980 to 1985) reduced urban production (by 0.2%). With regard to the redistributive mechanisms underlying these demand adjustments, Londono (1985) shows how a 10% fall in the food supply, brings about an increase of 13.1% in the real consumption of rentiers, a fall of 12.1% in that of wage-earners, and a 14.1% reduction in that of rural labourers. Lora and Ocampo (1986) stress how the 1980s contraction in urban production was accompanied by a redistribution of urban income towards farmers and rentiers restricting urban activity by reducing the propensity to consume its products.

74. More generally, this points to the importance of economic policy in shaping the influence of the external cycle upon industrial dynamic activity.

75. Alternative selective policies to force saving in the coffee sector through taxation would have been less inflationary and less contractionary for manufacturing than the policy of raising the internal price of coffee and the complementary instruments required to offset its expansionary effect. The inflationary effect of demand pressure stemming from the increase in coffee growers' spending, was aggravated by their high propensity to consume food an by the increase in the cost of labour and land which followed. Fiscal and monetary policies had a contractionary effect in urban sectors which was not offset by the coffee growers' increased spending (Ocampo, 1986).

76. An additional element of the policy considered in relation the deterioration of the balance of trade of manufacturing was the revaluation of the exchange rate.

77. The price of food followed (with a one year lag) the cycle of the coffee price during the 1975-78 period. The unusual increase in the price of food in June 1977 was preceded by an enormous rise in the coffee grain price from 1975 to 1976.

78. The consequent decrease in the liquidity of the manufacturing sector was analyzed in section 2.3.2. We emphasize here the contractionary effect of foreign exchange certificates, import deposits, the fiscal surplus, savings deposits, and the increase in reserve requirements: it accounted for a 50% decrease in the monetary base by the end of 1976, and a reduction of 7.2% in the bank multiplier.

79. Given the inflexibility of functioning spending, the burden of fiscal adjustment fell on public investment, the real value of which fell 22.1% and 1% in 1976 and 1977, respectively. This reduction is particularly relevant because of its effect on investment in manufacturing (Chica,1985).

80. The restriction of government intervention to public expenditure in infrastructure and monetary control was central to the neoliberal strategy of the development plan. The international coffee market collapse in 1980, and despite the deteriorating symptoms of the late seventies the Turbay government continued to liberalize imports (and to purchase imported metalmechanic goods), its expansionary fiscal policy, and its contractionary monetary policy (Lora, Ocampo,1986). The emphasis on externally financed expenditure in infrastructure reinforced the need for monetary control; increases in interest rates linked to open market operation proved damaging for manufacturing; and the emphasis on monetary control to fight inflation caused demand conditions for manufacturing to deteriorate without reducing inflationary pressures.

81. The correlation problem with the lagged dependent variable, implies that this strong influence only manifests itself when we use alternative autocorrelation correction methods. The exclusion of the lagged dependent variable brings about an increase in the significance not only of the income variables.

82. As regression 3 shows there is multicollinearity between these two prices.

83. The high elasticity of demand to these two variables is obtained, for reasons already considered, when the lagged dependent variable is excluded.

84. After a 7.6% real devaluation 1967-75, from 1975 to 1981 the revaluation reached 20.2% (DNP,1983).

85. While the revaluation from 1973 to 1975 was mainly due to domestic inflation, that of the adjustment period (1976-79) was mainly due to the decrease in nominal devaluation.

86. The influence of both factors became stronger since 1978, after the inital constraint on the income effect by the stabilization policy.

87. Surveys by Montes (1982) and Ocampo (1982) point to elasticities below one for relative prices and over one for income. Villar (1985) shows how the price elasticity diminishes aubstantially with the introduction quantitative controls.

88. The 1978-82 expansion can not be simplisticly attributed to an income expansion: the rate of growth of M increased while that of the GNP fell from 1967-74 to 1978-82.

89. According to Lora's decomposition exercise the liberalization effect (elimination of quantitative restrictions and fall in import prices due to tariffs reduction and exchange rate devaluation) accounts for 67.7% of the M's increase in 1980-82. Given that no more than 14% of the liberalization effect of 1982 can be attributed to the variation in the relative price of M, the contribution of the elimination of quantitative restrictions was crucial (Lora 1984).

90. It also contributed to illegal imports, paticularly in tobacco, textile and electric appliance sectors.

91. As is the case with Virginia Tobacco.

92. Textile imports reached 85% of the production of the three major textile enterprises in 1982 (Echavarria et al. 1983). A symptom of these competitiveness problems was the substantial import of inputs (through the Vallejo Plan) by clothing producers.

93. According to DNP (1983) government imports of capital goods accounted for 28.0% to 36.8% of government imports between 1979 and 1982 and between 31.6% and 42.0% of KG M during the same period. According to Echavarria et al (1983) government imports of capital goods represented nearly 65% of total KG imports in 1978-82, reaching a growth rate of 96% (in current dollars) in 1979.

94. After the Basic Custom Law of 1971 facilitated modifications in the tariff structure, the reforms of 1973, 1974, 1976 and 1979 combined reductions in average tariffs with movements from the prohibited regime to previous license and free regimes.

95. The tariff reduction implied an average fall of 100% in the level of nominal protection (from 52% to 26% for manufacturing) between 1970 and 1982. Although the greatest reduction was in LC, the relative level of effective protection for the consumption aggregate increased because CD continued to enjoy the highest levels of protection. The intersectoral structure was not modified, KG facing a tariff liberalization (Cubillos, 1985). The comparisons of effective protection structures through time is limited to the ratio of the sector-index to the aggregate index for each year, due to the impossibility of relating the indexes of effective protection between different years.

96. In 1973 243 positions (equivalent to 15%) were tranfered to the free import regime, 696 positions in 1967 and 627 (equivalent to 13.21%) in 1979. The percentage of import items under previous license fell from 96% in 1971 to 29% in 1982.

97. After an initial phase (1975-77) of anti-inflationary emphasis, in 1978-79 some sectors (e.g textiles) were affected by foreign competition (Misas. 1980). Nevertheless, the characteristics of the goods affected by tariff reductions (non-trade goods or export) or regime transfers (no domestically produced or those for which licences were always approved), indicates a rationalization of the protection structure (Ocampo. 1982; Garay. 1982).

98. Adding to the bias of the protection structure and the impact of government purchasing policy, the global licence system allowed tariff reductions (from 25% to 5%) for components of investment projects.

99. This is concentrated in 1978-82, particularly in 1978 and 1980 (see Table 3.4-4).

100. At the sectoral level (table 3.4-6) non-electric machinery (36), electric machinery (37), and transport equipment (38) had the highest contribution for 1974-82 and 1978-82. This was due to the rates of growth increases since 1967-74, which was particularly severe for transport equipment and electric machinery.

101. m grew more for industry than for the economy as a whole in 1974-82. While the elasticity of total M's to GNP growth was 1.82 in this period, that of M to manufacturing output was 2.42 (approximated by the rates of growth ratio). This illustrates the Dutch disease syndrome, this high rise in m coinciding with the swelling of the sectoral trade deficit and with a fall in capacity utilization in the manufacturing sector.

102. The increase in m in the 1978-82 subperiod of import expansion (table 3.4-6) was particularly high in metallic products (35), editorial (28) and paper (27), in sectors with low penetration, and in transport equipment (38), steal (34) and non-electric machinery (36), in high penetrations sectors (this

explaining the big increase in this coefficient for KG for 1974-82 and 1978-82). In the critical years of 1978 and 1980, non-electric machinery and electric machinery were affected by both expansions, while transportation equipment was only affected by the latter, and textiles only by the former.

103. The sequence in that reduction points to the deepening in the IS process up to 1974 and its later abandonment: the growth contribution of IS fell for LC and IG and increase for KG and CD from 1958-67 to 1967-74, while it fell for KG from this latter period to 1974-82. The fall in the dynamic contribution of SI is explained by its fall for LC and IG in 1967-74, and for CD and KG in 1974-82. The fall in the dynamic contribution of IS in successive subperiods reflects its evolution for CD and KG.

104. Sectors where the contributions of IS were substantial and increasing from 1958-67 to 1967-74.

105. A transformation of the intersectoral structure of M in the direction of the structure of P is interpreted here as a movement towards a competition exposure. The sum of the absolute values of the differences between the share of the sectors in P for 1967-74 and their share in M for 1978-82 (right side of inequality below), is not significantly lower than the sum of the absolute values of the differences between the share of the sectors in P and their share in M both for 1967-74 (left side of the inequality below). The inequality

$$\Sigma \left| (Pi/P)o-(Mi/M)o \right| \quad > \quad \Sigma \left| (Pi/P)o-(Mi/M)t \right|$$

hardly applies, the first term being 116.84% and the second 114.53%.

106. Results in Ocampo (1990) and Villar (1985) point to a relation of substitution, i.e. a harmful competitive effect of M. Their conclusion, however, is weakened by econometric problems of specification and of autocorrelation with the lagged dependent variable included as exogenous.

107. According to Echavarria et al (1983), illegal imports of textiles amounted to 84% of the production of the three largest textile firms in 1982, and smuggled cigarettes reached 30% of domestic consumption in 1979 (1983). Typical for electric appliances, out of the total number of colour T.V sets bought by April 1981, 63% were smuggled, 26% were domestically produced, and 11% were legally imported (according to calculations based on data from Gutierrez 1982).

108. Villar concludes that the positive influence of income exceeds the joint negative influence of relative prices (the significance of which is limited to the total M and KG) and quantitative controls (which is not significant for KG). As for our previous results, the influence of Y is particularly high (elasticities over 1.5) in the cases of LC and IG, and IQ is celarly significant in all cases; the influence of rp is limited to the case of IG for the second subperiod.

109. Although for CD and KG the elasticities for 1958-85 are lower, they are substantial for the subperiods.

110. The significance of current relative prices collapses in the estimations for subperiods. However, a significant negative influence of relative prices only for total manufacturing an IG with elasticities around 50% is also obtained in experiments with lagged relative prices.

111. IQ is not significant only for LC second subperiod, and IG complete period and both subperiods. Relative prices are significant only for total manufacturing and IG complete period, CD second subperiod, and KG first subperiod.

112. Period in which the export promotion policy contributed to a more stable growth of X (Chica. 1983).

113. After having the biggest weighted rate of growth in 1967-74 IG Xs suffered the greatest falls in 1974-82.

114. The rates of growth of textiles (23) and rubber products (30) fell most severely from 1967-74 to 1974-82 (when these sectors have largest negative contributions). Chemicals (31) was also among the sectors with the greatest decrease in its rate of growth in 1974-82, while foods (20) among those for 1978-82.

115. Chica (1980) presents the results of cross section exercises (at a sectoral dissaggregation four digits ISIC2), regressing X growth (from 1970 to 1976) against elements of the export promotion package, and characteristics such as degree of effective protection and import penetration in 1974. A structural change in the time series relationship since 1968 is also detected.

116. According to Echavarria (1982) the fact that the dynamic of world markets is the main determinant of X reflects the segmentation of the markets for Colombian X. He finds also that there is not substantial simultaneity bias, and relative supply prices are significant while those of demand are not. Villar's (1985) results, using three different models (two supply and one simultaneous), confirm the far greater influence of income compared to relative prices: in the simultaneous model relative prices of supply and demand (separately) are not significant.

117. According to Fedesarrollo the subsidy element compensated for relative price movements before 1973, while the explanatory power of the relative prices is not superior when they include the policy incentive component for 1973-83. Chica's (1980) results cast doubts on the contribution of this element additional to the one of the real exchange rate also for the 1957-77 period. As for the real exchange rate, the results of the estimates diverge according to whether the model includes or excludes demand factors, the supply price elasticity being over one when demand factors are excluded and below one when included (Ocampo 1982).

118. During the 1970-74 boom United States and the EEC absorved 37% and 25% of Colombian X, the Andean Group 8% and the ALALC 5%. By 1980 United States' share fell to 27%, and by 1981 that of the

EEC to 12% (the result of increasing proteccionism: DNP, 1983). In both 1974-75 and in 1980-82 the rates of growth of GNP of industrialized countries (especially of the industrial output of the United States in the latter years) decreased; and imports of the industrial countries fell in 1976 and 1981-83.

119. This is similar to what we concluded (Chica,1980 b) in relation to the expansion of 1967-73: the policy was important, but only in so far as it allowed the sector to take advantage of the expansion of world markets and of the development of the productive structure achieved through the import substitution process.

120. This is shown by the poorer performance of Colombian X compared with those of other countries (DNP, 1983).

121. According to a an ECLA study for 1960-62 and Hutchenson (1973) for 1973, the level of industrial prices in Colombia was not excessively high: the excess over the North American level was not as high as for other Latin American countries, and the difference of domestic prices and external prices (38.3%) was substantially less than the level of the average tariff (cit. en Perry,1979). Productivity growth from technological change and learning was substantial until 1969 (total factor productivity grew at a rate of 3% since 1925: Berry and Thoumi). Even for the sixties, when productivity increased at a rate of only 2%, Wogart (197) found labor productivity of almost all the branches of the colombian industry compares not so unfavourably with those of the American (between 1959 and 1967); and Dudley (1972) shows the learning effect was more important that increases in capital per worker or larger scales of production in the case of the metallic products.

122. Although productivity stagnation was compensated by wage deterioration in the early seventies, the wage recovery of the subsequent period (in the presence of stagnant productivity: section 4.4.) undermined the competitiveness of Colombian X in 1974-82.

123. The rate of productivity growth of Colombian manufacturing during the seventies (1%) is less than one third of the brazilian (3.8%) and half of the mexican (2.4%).

124. We consider as exporter sectors clothings (24) due to its rate of growth; and textiles (23), chemicals (31), and food (20) because they had the higher growth contributions of EX. Chemicals and clothing present high efficiency levels according to the profit rate; clothing, food and non-metallic minerals for the total productivity at international prices (the latter enjoying the highest growth of labour productivity in 1968-74); and food and textiles for the labour productivity relative to North American industry. Except chemicals and instruments and miscellaneous, these are sectors of the greatest substitution deepening (m's below 5% in 1967-74).

125. The index is given by the ratio of a country's share in world's exports by sector to its share of total X, i.e.

$$X_i^c / X_i^w$$

X_m^c / X_m^w

A value of 1 indicates a " normal performamce" (see UNIDO, 1982 p. 24). Comparing these indexes for Colombia, Korea and Brazil, the inferior indexes of Colombia suggest a lack of specialization and a dispersion of the export effort over too many sectors. Korea and Brazil have higher indexes concentrated in fewer sectors.

126. The stagnation of the sector's productivity growth in 1970-80 (as a result of the lack of investment and technical change) contrasts with porductivity growth of 36% in Germany and 48% in the United States (Paus, 1983). According to Echavarria et al (1985) the capital stock of Colombian textile sector increased less than 10% during the seventies, and lagged behind Latin American countries in modernization of machinery in the spinning branch.

127. The index is 0.37 compared to 14.8 for sugar manufactures in Colombia, and 13.4 for clothing in Korea (UNIDO,1982). Its rate of productivity growth of -3.0% in the 1968-74 period contrast with 17.7% achieved by the Korean clothings sector.

128. Similarly, oligopolistic structure and high costs of the synthetic fibre increased the internal price from 50% to 100% compared to Asian competitors.

129. Sectors hardest hit in the critical years 1974-75 and 1981-82 (presenting negative rates of growth) were: instruments and miscellaneous (39), food (20), and leather products (29) in 1974; chemicals (31) and clothing (24) in 1975; textiles (23) and chemicals (31) in 1981; instruments and miscelaneous (39) and textiles (23) in 1982.

130. IG experienced the largest fall in the dynamic contribution of EX from 1967-74 to 1974-82 took place in IG. EX growth contribution fell to negative levels in KG for 1978-82.

131. The worst negative contributions to growth took place in textiles (23), wooden products (25) and steel (34) in 1974-82; in leather products (29), editorial (28), non-electric machinery (36), non-methalic mineral products (33), and textiles (23) in 1978-82. The worse negative dynamic contributions took place in wooden products, steel, and rubber in 1974-82; in electric machinery (37), non-methalic products, and textiles in 1978-82. Out of these sectors textiles, wooden products, and steel enjoyed substantial contributions to growth in 1967-74.

132. The weight of EX was never greater than 6% of that of DD. Nor did achieve the dynamic contribution of IS for KG and CD in 1967-74. However, we have decreases in the dynamic contribution of EX, such as those of textiles, clothing, rubber products and chemicals. In 1974-82 X growth decreased most severly in textiles, rubber and chemicals. Clothing was the sector hardest hit by the crisis with the greatest x. Other sectors with a high x affected were leather products and instruments and miscellaneous, although not to the same extent.

133. The dynamic specification problem concentrates on the income variable which is strongly correlated with de lagged dependent variable. The world trade coefficient obtained with autocorrelation correction methods is not robust to specification changes.

134. As oppossed to the results with current relative prices presented in the table, experiments with lagged relative prices (which are not presented) point to the expected influence for the consumption disaggregates.

135. Results froma a study of the International Economy Department of the Central Bank point to different lines of production for foreign markets.

136. After defining a downward sloping IS (commodity market) equilibrium relationship in the μ-g space and a demarcation curve $\mu' = F(g,\mu)=0$ with $F_g<0$ (through a concentration mechanism) and F_μ changing from positive to negative at high levels of μ, Dutt shows that the economy will tend towards a low g (stable) intertemporal equilibrium (Dutt, 1984.p 32-34). Similarly, in Case A in Taylor (1985) a stagnationist dynamics stemms from the reduction in π due to an increase in the markup (case A in Taylor. 1985).

137. This is so in the case of a strong Engel effect. If MM is upwards sloping as a result of strong substitution and Malthus effects, the reverse process takes place.

138. The locus $q_m=0$ represents points at which EDM=0, i.e. at which the equilibrium condition $q_m = \{\theta[(1-\delta)c_a q_a-\phi]+I\} / 1-(1-\delta)c_m$ holds. As for the locus $\theta=0$, we substitute corresponding adjustment rules for p_a and p_m (the former divided by p_m) in $\theta = p_a - p_m$ to obtain

$$\theta = g[\theta(\delta c_a q_a - q_a + \delta c_m \theta - 1 q_m + \phi)] - \epsilon(\theta-\theta^*) = 0$$

or

$$q_m = \frac{\theta[(1-\delta c_a)q_a-\phi+\epsilon/g]}{\delta c_m} - \frac{\epsilon\theta^*}{g\delta c_m}$$

We then have the system of figure 3.1.3. It can be shown that trace of its Jacobian matrix is negative if $(1-\delta c_a)q_a > \phi - \epsilon/g$, and its determinant is positive if the slope of the schedule $\theta=0$ is greater than that of the schedule $q_m=0$; this is always the case when the latter is negative as result of a strong Engel effect. This condition is equivalent again to the requirement of sufficient agricultural supply, although adding a sluggish response of p_a to excess demand in this market.

139. It can be shown that we now are dealing with a system of hyperbolas. Conditions of existence converge with those of stability in pointing to the need for sufficient agricultural supply to meet autonomous demand for food and demand for inputs for manufacturing production.

140. It can be shown that the stability condition now imposes higher demands on inelastic agricultural supply.

141. As in the previous case, given dynamic stability, $\delta q_m/\delta q_a > 0$. However, the quotient of determinants we now obtain applying Cramer's rule is greater than before. It can be shown that the new numerator is greater as long as $c_m > c_a$, a plausible condition, i.e. we can expect a higher propensity to consume in the manufacturing sector than in agriculture. Furthermore, our assumption of a strong Engel effect is tied to the latter being small.

142. Evidemtly, the numerator is equivalent to h/e. Recalling that $h = m_k - b = m_k - (m-x) = x - m_1$, we get h/ue for the denominator.

4. PROFITABILITY: PROFIT MARGINS AND PRODUCTIVITY

We now analyse the deterioration of profitability conditions which combined with the worsening of financial and demand conditions to generate the crisis of industrial accumulation. Sections 4.1. and 4.2. provide the theoretical and methodological framework for sections 4.3. and 4.4 which focus on the profit margin and productivity. Section 4.5. summarizes the conclusions of the chapter.

4.1. THEORETICAL FRAMEWORK

We now consider various aspects of the deterioration of industrial profitability within the framework of the determination of the rate of profit which emerges from markup pricing. While section 4.1.1. illustrates how the evolution of profitability can be explained in terms of the determinants of the profit margin and productivity, sections 4.1.2. and 4.1.3. concentrate on these determinants.

4.1.1. INTRODUCTION: THE DETERMINANTS OF PROFITABILITY

4.1.1.1. The basic relationship.

We now examine a more general version of relation [3.1.1.] (i.e. $\pi \equiv muy$) by including some complications assumed away in section 3.1. Consider the following definition:

$$\pi \equiv m\ y\ u\ \tau - f \qquad [4.1.1.]$$

where: $\pi = \Pi_n/K$: net profit rate

$m = \Pi/Y$: profit share of income [1].

$y = Y/Q$: ratio of aggregate value to production value.

$u = Q/Q^*$: capacity utilization

$\tau = Q^*/K$: capital productivity

$f = F/K$: ratio fixed costs: capital

and: Π/ Π_n : gross profit/net profit

K : capital stock

Y : income

Q/Q* : product/product capacity

F : fixed costs.

Since this is an identity, the determinants of the rate of profit are given in our model by the determinats of its right hand side constituents. As for term f substracted to obtain the net rate of profits, the effect of fixed costs (and indirect taxes) on profitability depends on whether they are treated as part of the costs on which the markup is applied or as claims on value added to be provided for by the mark-up. As expressed in [4.1.1.] we follow the latter procedure in accordance with accounting practice, supported by the analytical arguments about mark up pricing below [2]/.

4.1.1.2. The profit margin.

Definition [4.1.1.] becomes explanatory once, according to the markup theory of prices, the share of profits is determined (given excess capacity) by an exogenously given mark-up, μ. From the equation of pricing by mark up

$$p = (1 + \mu)\ (\omega l + ar) \qquad [4.1.2.]$$

where p unit price

μ: mark up ex ante

ω: money wage

l: technical coefficient of labor = inverse of physical productivity (b)

r: unit cost of raw materials
a: technical coefficient of material inputs

it follows that the share of profits in income is given by [3]/

$$m = \frac{\mu (\omega l + ar)}{(1 + \mu)\, \omega l + \mu ar} \qquad [4.1.3.]$$

and the share of profits in product is given by

$$my = \mu / (1+\mu) \qquad [4.1.4.]$$

We consider in this section the implications of including variable costs (apart from labour) and fixed costs, as well as the complications which emerge by relaxing other assumptions made in section 3.1.1. In particular, we consider the implications for the profit margin of abandoning the operation of the firm within the range of minimum costs (where marginal and average variable costs are equal). We include also surprises due to either input prices (so that prices lag behind costs) or to demand (so that firms deviate from the expected level of u) [4]/. Thus, although in equilibrium the margin is determined by the mark-up in accordance with [5]/

$$my^* = \mu/1+\mu \qquad [4.1.5.]$$

in disequilibrium situations arising from errors in either costs or forecasted utilization when prices are established, the margin diverges from this ratio.

We start with fixed costs and increasing returns in order to illustrate the effect of capacity utilization movements. The margin becomes positively related to capacity utilization because fixed costs are spread as utilization increases. Introducing labour overheads (L_o), when the mark up is only applied to variable costs, the share of profits in income is

$$m = \frac{q^*[\mu(\omega l+ra)] - L_o/u}{q^*[(1+\mu)(\omega l+ra)-ra]}$$

and the profit margin is:

$$my = \frac{\mu}{1+\mu} - \frac{\omega L_o/u}{(1+\mu)(\omega l+ra)q^*}$$

This shows the positive effect of an increase in u on both m and the profit margin as a result of the spread of fixed costs (in this case L_o).

Now we consider the effect of surprises concerning the level of capacity utilization when the normal price hypothesis applies and there are increasing returns in the short run (i.e. db/du>0) [6]. To simplify, we exclude both fixed costs and the cost of materials. The profit margin is now

$$my = \frac{(1+\mu)(\omega/b)^* - (\omega/b)}{(1+\mu)(\omega/b)^*}$$

The numerator is the excess of the normal price, determined at the normal unit cost $(\omega/b)^*$, over the effective unit cost (ω/b). Therefore, the profit margin reduces to the ratio $\mu/1+\mu$ when there are constant returns, i.e. when b is invariant to movements in the level of utilization, or u remains at the expected level u*. To emphasize the effect of the divergences of u from u*, we transform [7] the previous ratio to

$$my = \frac{(1 - u^*/u) + \mu}{(1+\mu)} \qquad [4.1.6]$$

so that, as a result of increasing returns

$$my \begin{cases} > \\ = \\ < \end{cases} my^* \quad \text{iff} \quad u \begin{cases} > \\ = \\ < \end{cases} u^*$$

Therefore the level of capacity utilization affects the margin either due to the spread of fixed costs or because (given increasing returns) it diverges from its expected value.

Finally, let us consider the effect of unexpected increases in inputs costs when these increases are transmited with a lag t. The share of profits in income and the profit margin are given by

$$m = \frac{\mu(\omega_{-t}l + r_{-t}a) - (\Delta\omega l + \Delta r a)}{(1+\mu)(\omega_{-t}l + r_{-t}a) - (r_{-t} + \Delta r)a}$$

$$my = \frac{\mu(\omega_{-t}l + r_{-t}a) - (\Delta\omega l + \Delta r a)}{(1+\mu)(\omega_{-t}l + r_{-t}a)}$$

The substraction of the increase in the price of the inputs ($\Delta\omega$ and Δr) indicates the impact of marking up the lagged costs (ω_{-t} and r_{-t}). We thus complete the illustration of the divergence of the profit margin from its equilibrium value (determined by the mark-up ex ante) which occurs with the divergence of unit costs from their expected level as a result of divergences in either capacity utilization from its normal level in the presence of increasing returns, or in the price of inputs from the level to which the mark up was previously applied.

We conclude our discussion with some remarks about the meaning of the profit margin. Firstly, we distinguish between this ex post concept and the ex ante mark-up [8]. Secondly, the joint treatment of its elements, m and y as determined by the mark-up is based on the hypothesis that the firm's pricing rule has a target margin over variable costs (i.e. a profit share in product), and not only over labour costs (i.e. a profit participation on income). To simplify the analysis of the evolution of the profit margin it is helpful to consider the evolution of y in terms of the real cost of raw materials and their requirements (technical coefficient), and the evolution of m in terms of these same factors plus the real cost of labour vis-a-vis productivity [9].

4.1.1.3. The role of productivity and capacity utilization.

We now include productivity among the determinants of the rate of profit. The evolution of profitability is determined by the behaviour of the factors governing both the profit margin (i.e. my) and productivity, among which capacity utilization stands out. Substituting the definitional relationship [10]:

$$\pi \equiv u\tau k / u' \qquad [4.1.7.]$$

where b= labor productivity in terms of product per worker
k = K/L* : capital intensity
u'= L/L*: utilization in terms of labour
with: L/L*: labour/ full utilization labour

in [4.1.1.] we have:

$$\pi \equiv myu'/k \equiv myb^*u/k$$

with $b \equiv q/L$, and $b^* \equiv q^*/L^*$ i.e. labour productivity at full capacity.

Therefore, assuming technical change does not alter k, we have

$$\hat{\pi} = \hat{my} + \hat{b^*} + \hat{u}$$

This shows the evolution of profitability as determined by the dynamics of the profit margin, of productivity at full capacity, and of capacity utilization. We focus on the last two elements to introduce our framework for the analysis of productivity growth, which is given by the definitional relationship:

$$b \equiv \epsilon b^* \qquad [4.1.8.]$$

where ϵ is an index of returns to labour [11]. According to $b^* \equiv \tau k$ productivity at full capacity is given by the technologically-determined ratios q^*/K and K/L^*. Therefore [4.1.8.] shows productivity as determined by two types of increasing returns: first, static increasing returns implying $d\epsilon/du > 0$, i.e. decreasing unit costs stemming from the spread of fixed costs and decreasing average variable costs; second, dynamic increasing returns due to technological progress and dynamic scale economies [12], implying $db^*/dK > 0$.

We conclude by emphasizing the implications of this argument for the effect of capacity utilization and technology upon profitability. Capacity utilization affects the profit margin (due to fixed labour and the divergence of u from u*, given decreasing costs) and b (because of static increasing returns). Furthermore, given that capacity utilization is normally determined by the level of demand [13], this level plays an important role via u in the determination of profitability. On the supply side, τ in [4.1.1] summarizes the technological conditions expressed in b* and k [14]. In summary, the rate of profits in the above model is determined by the profit margin (my) and productivity (b). my is is a function of the mark-up

(via my*), u, the length of the lag of prices behind costs (λ_p), and wage resistance (α). b is determined by u (via ϵ), and productivity at full capacity (b*) which is a function of technology (T). Therefore we have for the rate of profits:

$$\pi \{ \begin{matrix} my\ (\ \mu,\ u,\ \lambda_p,\ \alpha) \\ b\ (\ b^*(T),\ u) \end{matrix}$$

This condenses the interacting supply (μ,T, λ_p, α) and demand (u) factors which affect industrial profitability.

4.1.2. MARGINS AND PRICES

We discuss the theory of mark-up pricing as well as the implications of the dynamics of prices and wages for the evolution of the profit margin. The final section introduces the specification of the prices and wages functions used in the econometric estimations.

4.1.2.1. Mark-up pricing.

This section provides a theoretical rationale for the fixed-price elastic-supply conceptual framework of the manufacturing sector which underlies our approach.

4.1.2 1.1. Prices and costs. Since the pioneering study of Hall and Hitch (1939) ample empirical evidence has accumulated in favour of the theories of mark up pricing known as the Full Cost Hypothesis (FCH) and the Normal Price Hypothesis (NPH) [15]. The argument of the last section followed Kalecki's conceptualization, according to which, in the markets for industrial goods firms set their prices by applying a mark-up to their costs of labour and raw materials to allow them both to cover their indirect labour and capital costs and to obtain some

profits (Kalecki, 1954). We follow Steindl's development of Kalecki's views in the sense that prime costs are constant in the relevant range [16], and that profit margins are determined by both internal accumulation requirements of the firms [17], and the competitive conditions they face

Two issues deserve further consideration: first, the type of costs to which the mark-up is applied and the corresponding cost curves: and second, price rigidity. As for the application of the mark-up either to the average total cost or to the average direct cost, strong arguments [18] favour Kalecki's viewpoint that firms use direct cost. Moreover, in practice managers use average costs rather than marginal costs when fixing prices [19]. Similarly, two characteristics of industrial technology crucial for our argument, i.e. economies of scale, and the extension of the relevant range, have been amply documented [20]. With regard to price rigidity, the recognition of the rationality of this behaviour is shared by the collusion-deterrence approach to oligopolistic pricing [21], and the clientele-menu-costs view of market strategy [22]. As for the implications of price rigidity, the consequent shift of the burden of adjustment to demand variations upon quantity movements justifies the emphasis of the last chapter on the impact of these variations upon the level of productive activity [23].

4.1.2.1.2. The determination of the mark-up. We approach this problem in three stages. Firstly, we consider the implications of extending the objectives of the firm from short-run profit maximization to long-run maximization of growth. Secondly, we emphasize the restriction imposed by market conditions upon the mark-up set by the firm in order to achieve this objective. Thirdly, we focus on the the influence of the demand cycle on the level of the mark up. As for the objective of the firm, the managerial/post Keynesian viewpoint that the firm aims not to maximize profits in the short run but to maximize growth in the long run [24] has two implications: first, the pricing policy of the firm is subordinated to a long run-strategy which is not

equivalent to the maximization of profits at each moment of time (Shapiro, 1981) [25]; second, this strategy aims at the maximization of growth in the long run. Although it is important to stress the close connection between growth and profits maximization from the long run perspective of the competitive process [26].

In the post Keynesian development of the K-S paradigm the firm strives to maximize growth in the long run subject to the restrictions imposed by both the resources required to finance capital accumulation and the demand implied by its market share. Steindl's view that profit margins are the result of the opposite growth requirements for the firm of increasing its accumulation funds and expanding its market share is the starting point of the post Keynesian analysis of price determination carried out by Eichner (1973), Harcourt and Kenyon (1976), and Wood (1975). In the latter's version of the link between pricing and investment decisions the long run mark-up target consistent with the goal of long run growth maximization is defined by market and financial conditions expressed in the opportunity and finance frontiers [27].

To highlight the forces operating behind the opportunity frontier, i.e. the restrictions imposed on the mark-up by market conditions [28], we integrate some of the elements derived from short-run profits maximization into the analysis of the long-run competitive process. We just refer to two types of oligopoly model, based on the short-run profit-maximization hypothesis, which help us to understand the competitive pressures constraining the price-making firm. Models of competition in quantities of undifferentiated products (Cowling & Waterson. 1976) provide a framework to analyze the factors condensed in Kalecki's degree of monopoly (i.e. concentration, collusion, and demand elasticity) [29]. However, prices are not treated as the strategic variable for the firm, but appear as the result of market conditions. A more suitable perspective is provided by models of price competition with product differentiation

emphasizing either the role of competitors' reactions and demand elasticity (Cubbin. 1974), or that of concentration and entry costs (Salop. 1979) [30]. As for the demand constraint upon the mark-up from the viewpoint of the long-run competitive process, two approaches complement each other depending upon the stage of the industry's life cycle, namely Steindl's absolute concentration, and Modigliani-Silos Labini limit pricing [31]. Whereas in an industry's initial stage the magnitude of the margin is restricted by firms' sales effort vis-a-vis technologically-determined cost differentials, in the latter stage it is restricted by market conditions expressed in the degree of economies of scale vis-a-vis the size of the market.

With regard to the influence of the demand cycle on the mark-up we distinguish this effect from that on prices, and on the margin. Two mechanisms, depending on the time horizon, determine the response of the mark-up to changes in demand. In the long run, growth in past demand projected into the future leads firms to increase the mark-up in order to finance investment activity motivated by that projection. In the medium term, one of two mechanisms operates according to supply and demand conditions in the markets: the mark-up moves countercyclically if conditions of competition and demand elasticity allow the to compensate for the effect of utilization changes upon the margin; the mark-up moves procyclically if those conditions force firms to adapt it to the level of demand. Therefore demand affects the margin through both capacity utilization and the response of the mark-up to its changes. Finally, these demand changes affect prices not only through the response of the mark up but also through the cost of raw materials whose prices are demand elastic [32].

4.1.2.2. The profit margin and the dynamics of wages and prices.

The first section introduces the determinants of wages and adopt a wage-resistance interpretation of the wage equation. The second section considers the prices-wages system (PWS) as a framework to analyse the conflict over the distribution of industrial

income, as well as the dynamics of prices and wages and the consequent evolution of the profit margin in an inflationary context.

4.1.2.2.1. The wage equation and real wage resistance. The idea that workers obtain nominal wage adjustments to compensate for expected increases in prices stems not only from a wage resistance theory but also from an Expectations Augmented Phillips Curve (EAPC) approach. Differences between the two interpretations relate to the crucial role of the struggle over the distribution of income in the former, and of disequilibrium in the labour market in the latter. According to the bargaining approach, wage dynamics are determined by workers' efforts to obtain increases which, by compensating for rising prices, allow them to achieve a target real wage. More precisely, assuming that unions' aims are both to maintain the real wage and to reach a target real wage, we have (Sawyer. 1984):

$$\omega^*_t = \omega_{t-1} \left(p^e_t / p_{t-1} \right)^{\alpha} \left(w^*_{t-1} / w_{t-1} \right)^{d} \qquad [4.1.9.]$$

where: ω^*: desired nominal wage
w/w^*: real wage/desired real wage

Assuming the bargaining power of unions is conditioned by the level of unemployment, i.e.

$$\omega_t = \omega^*_t \left[f(U_t) \right]$$

we have

$$\hat{\omega}_t = \gamma + \beta \hat{U}_t + \alpha \hat{p}^e_t + d \left(lw^*_{t-1} - lw_{t-1} \right) \qquad [4.1.10.]$$

The inclusion of unemployment's moderating influence on wage claims results in a hybrid model of the two approaches (Hall, Henry. Trinder. 1983) [33].

However, sound analytical and empirical arguments favour a bargaining as opposed to a EAPC approach [34], with problems about the role of the U term (which is of course pivotal for the EAPC approach) providing support for the former [35]. Meanwhile, the adoption of a bargaining Phillips curve (BPC) is based on the observed tendency of wages to catch up with previous increases in prices (in accordance with the real wage resistance hypothesis: Lawson. 1987) [36]. Concerning the coefficients in the BPC of equation [4.1.10.], if β is not statistically different from zero, we have support for the absence of a stable short-run w-U trade off [37]. α tends to be less than one because workers' anticipations must be translated into effective claims (Marglin. 1985) [38]; both the experience of an increase in the variance of inflation rates and the recurrence of rises in the price of food contribute to the increases in α over inflationary periods. Finally, when d [39] is not different from zero the particular case of EAPC is implied; secondly, there is a dynamic relation between the coefficient d and the degree of accuracy of inflationary expectations, so that a deterioration of the latter due to an unexpected increase in inflation may bring about an increase in d in subsequent periods (Sawyer. 1982)

4.1.2.2.2. The dynamics of prices and wages and the evolution of the profit margin. We now focus on the PWS framework to consider these dynamics as an expression of the distributional conflict. The frequent treatment of the price equation within the PWS [40] emphasizes the importance of considering the efforts of workers and capitalists to achieve an income share within a unifying framework [41]. Indeed, Kalecki's degree of monopoly as the determinant of the profit margin, refers to a balance of power between unions' militancy and firms' pricing policies in which disruptions by efforts of either side to modify that margin brings about an inflationary process of the conflictive claims type [42]. We approach this problem in three stages. First, we focus on the core conflict between capitalists and workers and

the way the clash between their efforts to obtain inconsistent shares in income is resolved by a change in the rate of inflation. Second, we consider the effect of inflation on the distribution of industrial income. Finally, we look at the impact of supply shocks such as increases in the prices of raw materials and food.

We consider the core conflict [43] to illustrate how adjustments in either the expectational or in the lags structures affect this conflict. For the wage and price equations, expressing wage claims and wage offers, we have

$$\omega = \alpha\, p^e \qquad p = \Omega\, \omega_{-\lambda} \qquad [4.1.11.]$$

with λ being the lag of prices to wages, and $\Omega=(1+\mu)/b$

To demonstrate the implications of an expectational adjustment we consider two extreme cases. In the first case wages are a function of backward looking expectations; so that assuming the simplest expectational structure (say $p^e=p_{-\sigma}$), we have $\omega = p_{-\sigma}$ (with σ being the lag of wages to prices implied by this structure). Then, assuming that $\sigma=1$ and $\lambda=0$ [44] we have

$$p = \omega \geq 0 \qquad \text{iff} \quad \alpha\Omega \geq 1$$

so that the real wage remains at $\omega/p= 1/\Omega$ and α affects only the rate of inflation. In the second case wages are a function of forward-looking expectations, i.e. (assuming the simplest expectational structure, say $p^e=p$) we have $\omega=\alpha p$. Thus, out of the only possible equilibrium at $\alpha\Omega=1$ [45], the system explodes. In this way, the transition from the first to the second case illustrates how the adjustment of expectations reduces room for conciliation, so that as $\sigma \to 0$ the system approaches explosive inflation if there is conflict between real wage claims and real wage offers, i.e. if $\alpha>1/\Omega$ [46] (see Appendix A.4-1). A similar effect is obtained if α increases, so that as a result of a rise in real wage resistance room for conciliation is further reduced,

unless Ω falls either through a forced change in the price rule (reducing μ) or via productivity growth [47].

With the acceleration of the rate of inflation workers push to either transform the wage settlement arrangement to one compensating for future rather than past inflation, or increase the frequency of wage settlements. This increase is another way of looking at the reduction in σ, i.e. at the adjustment in lags structures which worsens the conflicting claims inflation process. A process of lags reduction normally comes about with the aggravation of inflationary pressures under conditions of wages determined collectively by capitalists and workers and prices determined unilaterally by the firms. However, changes in λ and σ within the firm rule are only translated into inflation, i.e. distributional shares are independent of the lags structure [48].

Concerning the effect of inflation on distribution [49], in conditions of institutional indexation the real wage is a direct function of the frequency of wage settlements, and an inverse function of the rate of inflation (Bacha & Lopez.1986) [50]. More generally, factors affecting the relative dynamics of wage and price inflation (see Marglin. 1984; Rowthorn. 1977; and Taylor. 1985) are summarized in two categories: firstly, factors comprised by the conjuncture of the class struggle, i.e. the bargaining power of workers, institutional arrangements of wage settlements and price setting, and the lag structure implied by these arrangements; secondly, the effect of demand on the market power of firms and workers expressed by the relative strength of the utilization effect in the price equation vis-a-vis the unemployment effect in the wage equation within the PWS [51]. According to the interaction of demand effects through wage claims and price policies the margin is procyclical or countercyclical. Price policies favour procyclical behaviour if demand pressures increase firms' market power (Rowthorn) and oligopolist discipline weakens during the downturn (Modigliani & Padoa-Schioppa following Sylos Labini), and countercyclical

behaviour if this discipline becomes stronger during the downturn as a result of fears of a price war (Kalecki). The effect of a tight labour market on wage claims favours a countercyclical margin (Kalecki, Rowthorn). Therefore, the profit margin will follow a procyclical pattern if this market power effect in the labour market is overcome by the firms' market power effect in the goods market [62].

A change in distributional shares can take place to the extent that a shock affecting the structure of price and wage dynamics leads to a higher acceleration of the inflation of one vis-a-vis the other. This distributional effect is reversed once the adjustment to the shock is completed (with the inflation rate left behind catching up) and the system reaches its steady state with higher inflation. Meanwhile, the aggravation of inflationary pressures reduces capitalists' scope for achieving a shift in their favour by increasing prices after the wage settlement and the likelihood of the system reaching an equilibrium. Two sets of circumstances are emphasized in both the structuralist and Rowthorn's analyses of inflation: first, the process generated by a shock of agricultural prices, the analysis of which can be extended (Rowthorn. 1977) to the exacerbation of the inflationary conflict by any additional claim on income from either the government (in the form of taxes) or foreigners (in the form of a terms of trade deterioration); second, the expectational adjustment brought about by accelerations of inflation implying an anticipatory reaction on the part of workers. Thus, explosive inflation is the likely outcome of an increase in the burden imposed by exogenous income claims, and/or the persistence of firms in their attempts to achieve an income share higher than that negotiated in the wage settlement, once this pricing policy is anticipated by the workers.

Finally, we concentrate on the exacerbation of the distributional conflict by supply shocks. We approach the problem in two stages, corresponding to the two forms in which the inclusion of additional prices in the PWS complicates the distributional

conflict [53]: firstly, the impact of an increase in agricultural prices; and secondly, the effect of import prices in Rowthorn's aspiration gap argument, and in Desai's terms of trade analysis. Agricultural prices enter into the system via the effect of input costs in the price equation, and through the effect of food prices in the wage equation [54]. Thus we have $p = \Omega_1 \omega + \Omega_r r$, with the Ωs now referring to the product of $(1+\mu)$ times the respective technical coefficient, and

$$lp_r = \delta lp + (1-\delta) lp_a, \quad \omega = \alpha p_r^e ,$$

wit δ being the share of manufactures in the retail index (p_r) and $(1-\delta)$ that of agricultural products. As shown in section 3.1.1., the equilibrium to which the system converges after wages reaction to the increase in p_a is a precarious one: permanent p_a and ω inflation express an excess demand for food and a wage gap which keep the system on the brink of explosive inflation. The addition of the second effect (through r) reduces the scope for the system to reach and maintain that inflationary equilibrium. The initial impact of this second effect (i.e. before wages react) upon income shares is illustrated by its impact on the real wage in $\omega/p = 1/\Omega_1 [1-\Omega_r r]$ [55]. Appendix A.4-2. shows how the share of income in product the share of profits in income deteriorates in the adjustment process.

To conclude we extend this argument to the effect of import prices in Rowthorn's aspiration-gap argument and Desai's terms of trade analysis. Rowthorn's argument is based on the concept of an aspiration gap which measures the inconsistency of the income share targeted by firm's pricing with other claims, including both the share of workers negotiated in the wage settlement and the income pre-empted by government and foreign suppliers. Two points related to the effect of import costs (f) are relevant for our analysis of the impact of an increase in the cost of raw materials. First, the consequent increase in unanticipated inflation via the exacerbation of the aspiration gap ($A_r \Delta f$) worsens with the resistance of capitalists and workers

to the deterioration of their income, with the higher coefficients $\dot{\gamma}$ and $\dot{\rho}$ expressing how quickly each side is able to pass the burden onto the other [56]. Second, this inflationary drive (which shifts upwards the p_u-u trade off in the Phillips curve illustrating the Demand Effect) is likely to push inflationary expectations beyond the threshold where anticipatory behaviour starts driving the economy towards hyperinflation. Desai's analysis is based on the decomposition of the dynamics of the wage share (n) in product terms, so that the term (Δlp_r-Δlp) [57] favours workers (capitalists) when is positive (negative), expressing the scope (burden) allowed (imposed) to capitalists by favourable (unfavourable) terms of trade vis-a-vis food suppliers. The wedge allowed to employers by favourable terms of trade ($1-\alpha\delta$) [58] erodes with the increase in α which comes about with the rise in workers' inflation consciousness.

4.1.2.3. The specifications.

4.1.2.3.1. The price equation. We now discuss the meaning of the coefficients in the specification:

$$\hat{p} = v_u \hat{u} + \Gamma_w \hat{w} + \Gamma_r \hat{r} + \Gamma_b \hat{b} \qquad [4.1.12.]$$

Consider the following form of equation 4.1.2] in rates of growth:

$$\hat{p} = (1 + \mu)\hat{} + \hat{c} \qquad [4.1.13]$$

with c being the unit cost of labour and material inputs. Concentrating on this component, the equation

$$\hat{c} = (\hat{w} + 1)\Gamma_w + (\hat{r} + a)\Gamma_r \qquad [4.1.14]$$

(with the Γ' being the base weights of labour and material inputs

in c) becomes

$$\hat{c} = \Gamma_w \hat{w} + \Gamma_r \hat{r} - (\Gamma_w + \Gamma_r) \hat{b}$$

assuming that productivity of labour and of raw materials b_l and b_a, i.e. the inverses of the technical coefficients l and a, grow at the same rate b.

As for the term (1 + u), we consider the influence of demand (measured by capacity utilization) assuming that the rate of growth of μ is a linear function of both the level of utilization and the rate of growth of costs. Therefore [59]

$$(1 + \mu) = v_u u + v_w \hat{w} + v_r \hat{r}$$

So that, assuming that the productivity of labour and raw materials grow at the same rate, we have

$$\hat{p} = v_u u + \Gamma_w \hat{w} + \Gamma_r \hat{r} + \Gamma_b \hat{b} \qquad [4.1.15.]$$

where: $\Gamma_w = \Gamma_w' + v_w$

$\Gamma_r = \Gamma_r' + v_r$

$\Gamma_B = - (\Gamma_w' + \Gamma_r') = -1$

Therefore, each coefficient of the different costs measures both the relative weight of the respective cost in the average variable cost, and the reaction of the mark up to its growth (apart from incorporating the initial level of the mark-up). If their sum is more (less) than one implies that this reaction is positive (negative). FCH will be corroborated if the coefficients of w and r substantially exceed that of u, the latter being statistically insignificant. Additionally, a fall (increase) from one subperiod to another in the sum of the coefficients indicates a deterioration (improvement) of firms' capability to transmit

costs into prices, expressing the influence of various factors (e.g demand) upon the evolution of the margin.

4.1.2.3.2. The wage equation. We adopt the specification of equation 4.1.10. which can be considered as a hybrid of the BPC and the EAPC approaches. Concerning the two alternatives of adaptative (AE) versus rational (RE) expectations as representations of the mechanism of forming inflationary expectations, it is worth stressing the general character of the latter in relation to the former [60], and how an ARIMA representation can be considered as a weak application of the RE scheme [61], which contrasts with its strong application in the estimation of the expected growth of prices by means of the reduced form of a complete macroeconomic model (Hall, Henry, Trinder. 1983). On the other hand, with regard to the problems of estimation, the introduction of an AE scheme implies that the error term in the wage equation does not have the classical properties, i.e. it follows a AR (1) process [62].

Thus, for the expectational variable $\hat{p}^e$, we include the following possibilities: 1) Various simplistic AR (SE for simplistic expectations) schemes, either simple or the weighted average of the last 2 to 5 periods. With 2 periods memory, for example, we have

$$\hat{p}^e_t = \theta\, \hat{p}_{t-1} + (1-\theta)\, \hat{p}_{t-2} \qquad \text{with } \theta=\{0.2,0.4,0.6,0.8\}$$

2) Two versions of the AE scheme: the usual arrangement with the correction coefficient adopting the values 0.2, 0.4, 0.6, and 0.8; or a modification designed to overcome the mentioned autocorrelation problem which consists of introducing two variables of the form:

$$X_{1t} = (1-\theta)^t$$

$$X_{2t} = \sum_{s=0}^{t-1} (1-\theta)^{s} \hat{p}_{t-s-1}$$

so that we split the sum in the equation

$$\hat{\dot{w}}_t = a + b\,U_t + c\theta \sum_{s=0}^{\infty} (1-\theta)^{s} \hat{p}_{t-s-1} + d\left(t / w^*\right) + \epsilon_t$$

into two parts: that determined prior to the initial date of the sample, i.e. can be taken as constant; other which belongs to the sample, i.e. is observable. Thus, we estimate the equation [63]:

$$\hat{\dot{w}}_t = a + b\,U_t + c\,\theta\delta\,X_{1t} + c\,\theta\,X_{2t} + d\left(t / w^*\right)_t + \epsilon \quad [4.1.14.]$$

where $\delta = \sum_{s=0}^{\infty} (1-\theta)^{s} \hat{p}_{0-s-1}$

3) An ARIMA scheme which overcomes the rigidity of the previous AR schemes without posing the theoretical [64] and econometric requirements of the implementation of an RE scheme through a complete macroeconomic model.

4.1.3. PRODUCTIVITY AND INCREASING RETURNS

4.1.3 1. Introduction.

According to section 4.1.1.3. we can transform the definitional relationship 4.1.8. into a functional one such as b=b(u,K) if there are static increasing returns implying $d\epsilon/du>0$, and dynamic increasing returns implying $db^*/dK>0$ [65]. With regard to the effect of movements in capacity utilization, $d\epsilon/du>0$ iff the percentage change in Q exceeds the percentage change in L as u

varies [66]. As for the effect of capital accumulation, db*/dK>0 iff technological transformations (i.e. in capital productivity and capital intensity) implying a labour-augmenting effect accompany accumulation [67]. In this way, we combine within an integrated framework Kalecki's emphasis on the importance of capacity utilization movements and Kaldor's stress on the effects of capital accumulation [68].

4.1.3.2 Static increasing returns.

Decreasing average total costs for a given plant are due to either the spread of fixed costs or decreasing average variable costs. The sources of economies in plants related to indivisibilities and specialization are economies in operating costs resulting from further division of labour, stochastic operation of large numbers or reduction in unrepaired breakdowns, working capital tied up in stocks of materials, and economies in transactions. With regard to the implications of static increasing returns for the analyis of the evolution of productivity, the limitations imposed by the exclusion of utilization within its determinants are emphasized by recent developments in the theory and measurement of productivity growth within a temporary equilibrium framework [69].

4.1.3.3. Dynamic increasing returns

Within Kaldorian dynamic increasing returns, we distinguish two aspects of the effect of capital accumulation on productivity: the impact of investment activity separate from complementarities with the pre-existing stock of capital; and the impact of these complementarities and other effects of previous accumulation. Technological progress and plant size scale economies affect productivity through investment activity. Dynamic scale economies stemming from the maturity of the productive apparatus previously

accumulated affect productivity through the capital stock. This is linked to factors such as the development of intersectoral complementarities, learning by doing, complementarities between human and physical capital, derived from previous accumulation of capital, which are both dynamic and aggregate in character [70].

In Kaldorian terms, we subsume mechanisms considered in both the discussion of the technical progress function and the Verdoorn Law in dynamic increasing returns to account for the growth of b*. Verdoorn's correlation between productivity growth and output growth in manufacturing industry formulates Young's dynamic cumulative supply-demand interactions for the sector as a whole [71]. The pivotal role of increasing returns (and imperfect competition) for the development of a relevant theory of growth is epitomized by the recent upsurge of models which abandon traditional technological assumptions and account for trends in growth rates, patterns of spacial location of economic activity and international trade [72].

4.1.3.4. The specification.

We estimate the following productivity function

$$b = b\ (u,\ K_{-1},\ I_{-1}) \qquad [4.1.15]$$

where the term u expresses short-run static increasing returns, and the terms K_{-1}, and I_{-1} represent the two elements of dynamic or long-term increasing returns. Thus, in this specification we have, on the one hand, last period investment as an index of incorporation of recent technological advance [73]; and on the other hand, the inherited capital stock as an index of dynamic scale economies.

4.2. THE PROFITABILITY CRISIS.

We now focus on the deterioration of the rate of profit.. After an initial section about the methodology of this analysis, the second section points to the fundamental facts concerning the evolution of the rate of profit and its constituents.

4.2.1. INTRODUCTION

According to the theoretical framework of the previous section we analyze profitability erosion in terms of the evolution of the profit margin and productivity. We use the following definitions (with subscript n for net profits and margin):

$$\pi = \Pi_n/K$$

$$\mu_n = \Pi_n/VC \quad , \quad \mu = \Pi/VC$$

$$\beta = VA/L \quad , \quad b = q/L$$

μ is how an index of the ex post profit margin (not the ex ante price rule as in the last section) [74].

with: $\Pi_n = VA-LE-GC-T$, $\Pi = VA-LE-(GC-FC)$, i.e. $\Pi_n = \Pi-FC-T$

$Q = VA+MC$

$VA = \Pi +LE+GC+T$

$VC = MC+LE$

where VC: variable costs

VA: value added

LE: labour earnings

GC: general costs: rents and services payments

T: indirect taxes

FC: fixed costs: interest, depreciation and royalties

MC: material costs: raw materials, intermediate inputs, energy costs

The variables included are those used in the production accounts of the Manufacturing Survey (DANE). To clarify the methodology of the analysis of these indexes we look at the margin and productivity. We consider the relation between gross and net margin (calculated on the basis of this production accounting), and another indicator of the evolution of the margin based on the price equation. A difference in the behaviour of the net profit margin vis-a-vis the profit margin points to changes in firms' capacity to pass on changes in indirect taxes and fixed costs [75]. In terms of the evolution of net and gross profits (the numerators of the ratios for the net and the gross margins) and the constituent elements of π, gross profits may decline for two reasons: first, VA may deteriorates vis-a-vis MC, i.e y falls when a variable input cost push is not passed on into prices; second, m may decrease due to labour and services costs presssures in (GC-FC). Additionally, net profits are further eroded by increases in f stemming from increases in fixed costs and indirect taxes.

Another index of the behaviour of the margin is provided by the price equation in rates of growth. From [4.1.13] and [4.1.14], we have

$$\mu = p - [(w + l) \Gamma_w + (r + a) \Gamma_r]$$

$\mu^{\cdot}$ is the rate of growth of $(1+\mu)$, i.e. $(d\mu/dt)/(1+\mu)$. When productivity of labour and raw materials b_l and b_a, grow at the same rate b [76]:

$$\hat{\mu} = \hat{p} - [\hat{\Gamma}_w \hat{w} + \hat{\Gamma}_r \hat{r} - (\hat{\Gamma}_w + \hat{\Gamma}_r) \hat{b}]$$

As for the productivity indexes β and b have specific advantages as well as shortcomings. β has the advantage of considering, via y, the effects of changes in the technical coefficient and the real cost of material inputs (a and r/p in section 4.1.1.), i.e.

of being an index net of material inputs effects. However when β is used with the margin there is double-counting of the these effects, i.e. both through the margin (my) and through value added per worker (by). b has the advantage of being the inverse of the technical coefficient (l) of the price equation, but it is an index which involves those material inputs effects [77]/.On the other hand, b and β involve the productivity of capital (τ), whereas the alternative methodology of considering changes in total factor productivity as an index of technical innovation isolates the "quantity" aspect of capital accumulation. This, however, ignores the capacity utilization and capital accumulation as technical innovation effects emphasized here.

4.2.2. THE PROFITABILITY CRISIS

We now look at the erosion of the rate of profi constituent elements.

4.2.2.1. The evolution of the profitability indexes [78]/.

The rate of profit (see Table and Chart 4.2-1) exhibits a long-term decreasing trend from 1972 onwards which worsened during the critical 1975-82 period [79],/ in which μ, β and u deteriorated simultaneously. We observe the same long-run falling tendency in the profit margin, although not as clearly from the sixties to the seventies as it was after 1975 [80]/; productivity, in turn, remains stagnant from 1972 to 1978 [81]/, while utilization shows a decreasing trend since 1974 (though with an expansion in 1978-79) [82]/. The structural decline in the rate of profit during the seventies can be explained as follows: from 1972 by the drop in productivity, aggravated in 1976 by the wage recovery; from 1972 by the erosion of the margin which also worsened from 1976; and from 1974-75, by the fall in capacity utilization which worsened after the 1978-79 expansion [83]/.

TABLE 4.2-1

EVOLUTION OF PROFITABILITY INDICATORS

	CURRENT TERMS		CONSTANT TERMS						
	(1) Profit Rate	(2) Profit Margin	(3) Productivity VA/L	(4) Productivity Q/L	(5) Product Real Wage	Gross Profit Margin	Net Profit Margin	Profit Rate	Utilization
1958	26.65	19.39	4.38	11.87	1.40	19.42	14.08	21.84	73.5
1959	29.02	19.73	4.71	12.54	1.47	20.15	15.05	24.14	78.0
1960	35.50	21.66	5.22	13.14	1.61	22.24	17.38	28.76	82.5
1961	38.46	22.65	5.61	13.58	1.75	23.38	18.51	30.06	84.0
1962	43.79	24.32	6.18	14.67	1.99	24.50	19.60	32.17	90.0
1963	45.81	28.36	6.35	14.31	2.03	28.71	23.43	34.57	79.5
1964	46.62	24.50	6.50	15.19	2.15	25.03	20.49	31.99	82.5
1965	43.52	25.83	6.62	14.03	2.18	26.17	21.00	31.86	79.5
1966	32.15	22.13	6.55	16.02	2.16	22.37	17.09	26.79	79.5
1967	30.52	22.79	6.78	16.56	2.37	22.45	16.78	25.37	75.0
1968	30.56	24.74	7.38	17.52	2.41	24.41	18.90	28.78	79.5
1969	34.75	27.24	7.46	16.78	2.47	27.32	21.17	31.77	78.0
1970	34.33	28.23	7.36	17.29	2.61	28.23	21.86	33.07	79.5
1971	36.73	30.11	7.87	18.36	2.67	29.51	22.48	34.21	82.5
1972	36.39	29.24	7.76	18.07	2.67	28.60	20.20	31.43	84.0
1973	31.56	25.99	7.32	17.73	2.50	25.96	17.77	28.62	90.0
1974	37.30	30.05	7.44	17.64	2.19	33.02	23.16	32.36	88.5
1975	31.70	28.35	7.00	16.96	2.22	28.43	18.14	25.67	76.5
1976	30.97	27.27	7.36	17.93	2.37	29.08	15.26	21.03	81.0
1977	32.11	27.96	8.02	18.06	2.56	27.90	12.17	18.36	81.0
1978	30.22	25.51	8.76	19.54	2.87	25.14	9.40	15.40	88.5
1979	37.94	29.48	9.37	19.86	2.93	29.13	14.16	22.92	90.0
1980	25.90	23.04	9.05	20.03	3.02	22.66	9.06	14.55	84.0
1981	23.42	22.77	9.29	20.02	3.18	22.54	9.31	13.76	73.5
1982	18.03	20.29	9.26	19.75	3.44	20.10	6.49	9.17	67.5
1983	15.23	18.60	9.46	20.49	3.58	18.36	5.25	6.99	63.0
1984	15.87	18.86	10.22	22.42	3.65	18.60	5.25	7.19	69.0
1985	17.38	20.74	11.09	24.76	3.49	20.67	6.46	9.05	73.5

SOURCE: Author's calculations based on EAM

(1) Profit Rate = (Value Added-Labor Earnings-Profits)/(Capital Stock) x100
(2) Profit Margin = (Value Added-Labor Earnings-Profits+Other Capital Earnings)/
/ (Material Costs+Labor Earnings+Profits-Other Capital Earnings) x100
(3) VA/L=Value Added/ Payed Worker x100
(4) Q/L=Production/ Payed Workers x100
(5) Wages/ Payed Workers x100

CHART 4.2.1.

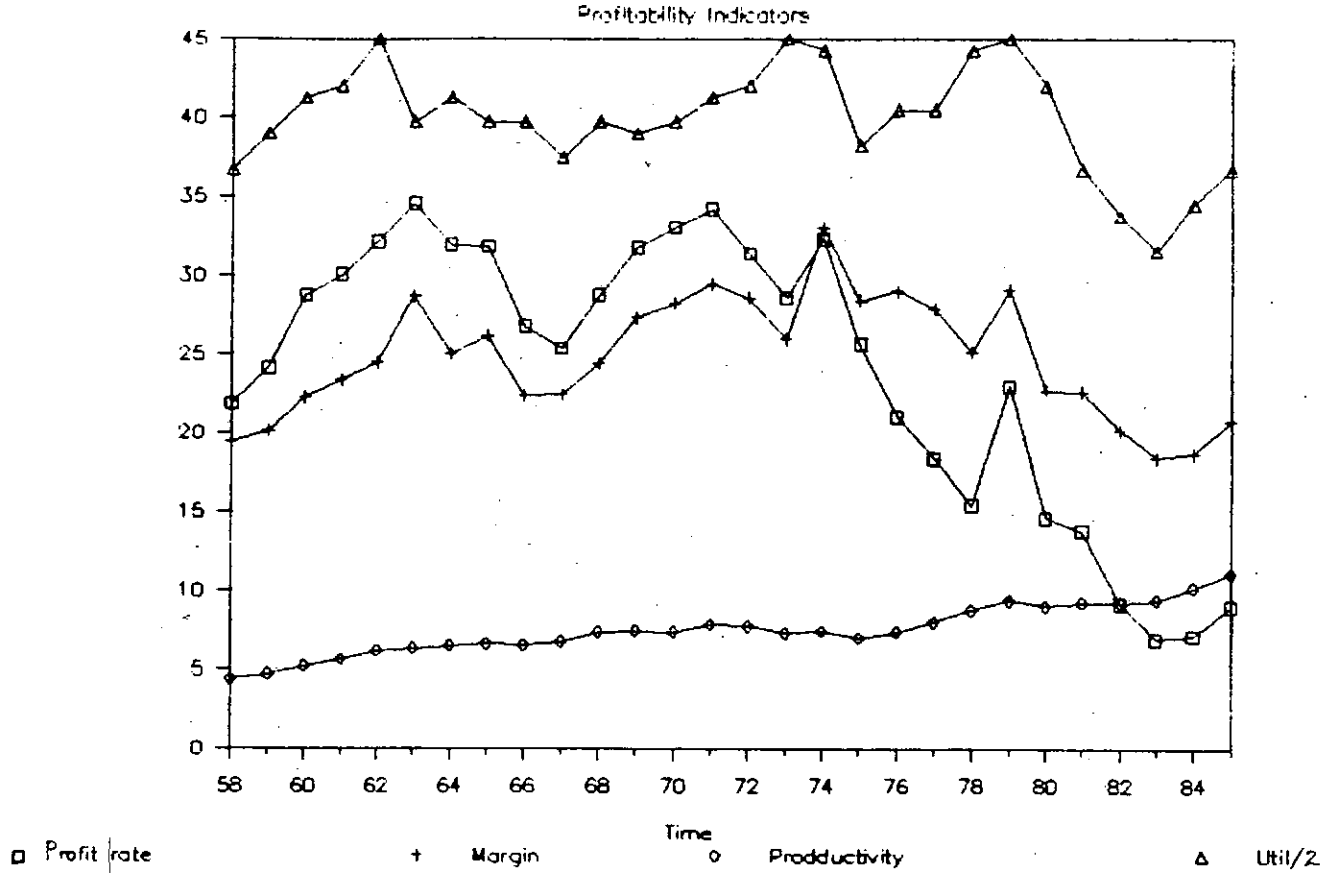

Profitability Indicators
45
40
35
30
25
20
15
10
5
0
58
60
62
64
66
68
70
72
74
76
78
80
82
84
Time
Profit rate
Margin
Prodductivity
Util/2

TABLE 4.3-1

1. RELATIONSHIP BETWEEN INFLATION RATES

YEAR	P/e	P/IN	P/IM	P/W	P/CC	P/CP
1971	1.0704	1.4431	1.8025	1.1741	1.1102	1.3853
1972	0.8584	1.1507	1.0420	1.0576	1.4221	1.9242
1973	1.0899	1.0014	0.8566	1.4045	0.9497	0.7410
1974	0.6830	0.7734	5.5715	1.4857	1.2319	1.0435
1975	1.0879	1.5798	1.5273	1.2430	1.4483	1.4457
1976	0.5991	0.5410	1.2312	0.8320	0.8024	0.6476
1977	1.0056	0.6455	1.4438	1.1192	0.8676	0.7911
1978	0.6033	1.8716	1.5227	0.3960	0.9166	0.8919
1979	0.6285	1.1733	5.9043	0.9794	1.1372	1.1568
1980	0.9419	3.0927	0.7832	0.9394	1.3969	1.4857
1981	0.8888	0.9129	1.4130	0.8576	0.9249	0.9164
1982	0.7789	0.9291	2.2206	0.6480	0.8097	0.8237

2. INDEX RELATIONS

Years	P/e	P/IN	P/IM	P/W	P/CC	P/CP
1970	1.000	1.000	1.000	1.000	1.0000	1.0000
1971	1.006	1.031	1.045	1.015	1.0097	1.0276
1972	0.986	1.048	1.050	1.022	1.0482	1.0942
1973	0.997	1.048	1.027	1.063	1.0339	1.0453
1974	0.886	0.972	1.320	1.165	1.0808	1.0572
1975	0.901	1.053	1.424	1.216	1.1421	1.1310
1976	0.806	0.916	1.472	1.174	1.0627	1.0318
1977	0.807	0.837	1.555	1.196	1.0231	0.9870
1978	0.737	0.897	1.636	0.979	1.0061	0.9700
1979	0.654	0.927	1.988	0.975	1.0315	0.9988
1980	0.646	1.088	1.875	0.962	1.0941	1.0757
1981	0.629	1.066	1.999	0.929	1.0531	1.0553
1982	0.598	1.051	2.219	0.846	0.9990	1.0161

Where: P: Price index for industrial producer without coffee
IN: Cost index of national raw materials. Constructed weighting 36 items
IM: Cost index of imported draw materials. Constructed weighting 36 items
e: Index of cost of energy. Prices of combustibles and lubricants. BR.
W: Index of wage rate: earnings/industrial employment
CC: Cost composed of IN,IM,e,W. Weigthed by structure of 1968.
CP: cost of IN,IM,e,W weighted by structure of each year
SOURCES: TABLE A.4.3-4

TABLE 4.3-2

GROWTH OF LABOUR PRODUCTIVITY AND WAGES

	Productivity VA/L	Productivity Q/L	Product Real Wage
1959	7.61	5.61	5.80
1960	10.86	4.78	9.52
1961	7.35	3.33	8.70
1962	10.13	8.05	13.71
1963	2.83	-2.49	2.01
1964	2.38	6.21	5.91
1965	1.79	-7.65	1.40
1966	-1.08	14.20	-0.92
1967	3.53	3.37	9.72
1968	8.89	5.80	1.69
1969	1.10	-4.22	2.49
1970	-1.38	3.01	5.67
1971	6.89	6.20	2.30
1972	-1.40	-1.59	0.00
1973	-5.66	-1.90	-6.37
1974	1.66	-0.49	-12.40
1975	-5.97	-3.88	1.37
1976	5.19	5.76	6.76
1977	9.04	0.72	8.02
1978	9.23	8.17	12.11
1979	6.87	1.67	2.09
1980	-3.36	0.84	3.07
1981	2.65	-0.86	5.30
1982	-0.38	-1.34	11.44
1983	2.16	3.74	5.35
1984	8.11	9.43	4.28
1985	8.49	10.45	-1.03

RATE OF GROWTH BY SUBPERIODS

	Productivity (VA/L)	Productivity (Q/L)	Product Real Wage
1958-67	4.78	3.24	5.81
1967-74	0.94	0.93	-0.13
1974-82	3.82	2.11	6.05
1978-85	2.63	2.76	5.07

SOURCE: Author's calculations based and EAN

TABLE 4.3-3
WAGES DYNAMICS

	IPC	IPCAL	P	W	W/P	W/IPC	W/IPCAL	W/W*	(W/P)/(W/P)*
1964	0.599	0.609	0.570	0.445	0.780	0.743	0.731	0.776	0.979
1965	0.619	0.649	0.627	0.494	0.788	0.798	0.762	0.883	1.052
1966	0.741	0.764	0.723	0.574	0.793	0.774	0.750	0.909	0.969
1967	0.803	0.827	0.782	0.675	0.863	0.841	0.816	0.899	1.053
1968	0.850	0.879	0.828	0.884	1.068	1.040	1.006	1.124	1.237
1969	0.939	0.955	0.893	0.827	0.927	0.881	0.866	0.794	0.847
1970	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.877	0.962
1971	1.095	1.156	1.093	1.091	0.998	0.996	0.944	0.894	0.958
1972	1.238	1.342	1.266	1.241	0.980	1.002	0.925	0.884	0.964
1973	1.497	1.755	1.557	1.377	0.885	0.920	0.785	0.789	0.885
1974	1.864	2.289	2.069	1.720	0.831	0.923	0.752	0.745	0.888
1975	2.286	2.732	2.527	2.091	0.827	0.915	0.766	0.713	0.880
1976	2.735	3.497	3.060	2.630	0.859	0.962	0.752	0.753	0.925
1977	3.660	4.706	3.698	3.180	0.860	0.869	0.676	0.695	0.836
1978	4.313	5.345	4.245	4.451	1.049	1.032	0.833	0.757	0.993
1979	5.374	7.060	5.351	5.684	1.062	1.058	0.805	0.844	1.017
1980	6.803	8.925	6.726	7.377	1.097	1.084	0.827	0.828	1.025
1981	8.673	11.482	8.418	9.700	1.152	1.118	0.845	0.818	1.031
1982	10.782	14.322	10.170	12.993	1.278	1.205	0.907	0.847	1.078
1983	12.939	16.801	12.206	16.403	1.344	1.268	0.976	0.842	1.052
1984	15.020	19.973	14.540	20.670	1.422	1.376	1.035	0.897	1.086
1985	18.633	25.592	39.737	25.425	0.640	1.365	0.993	0.847	0.992

IPC: Index of consumption prices
IPCAL: Index of consumption prices food group
P: Index of productor prices
W: Nominal wage index
W*: Target nominal wage
W/P: Real product wage
W/IPC: Real wage
W/IPCAL: Nominal wage deflacted by consumer price index food group
W/W*: Wage resistance = Observed Nominal Wage/Target Nominal Wage
(W/P)/(W/P)*: Wage achievement = Observed Real Wage/Real Wage correspondent to the Target Nominal Wage

SOURCE: Author's calculations based on data from DANE and Banco de la Republica

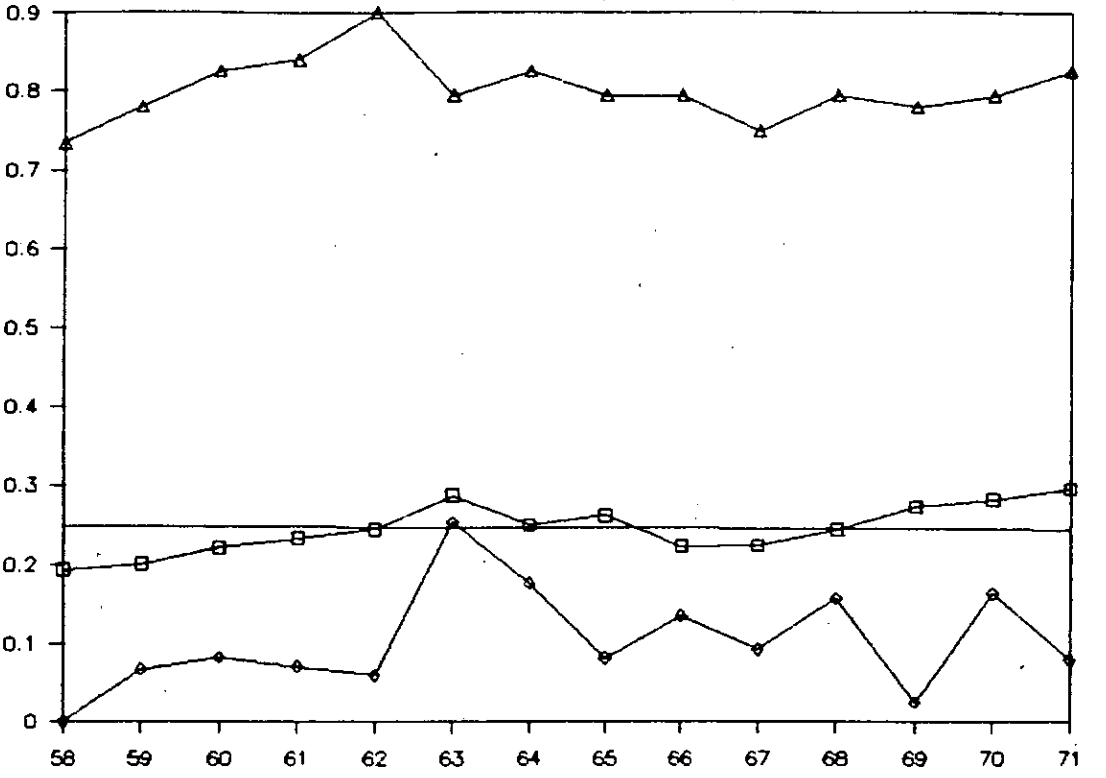
TABLE 4.3-4
PROFIT MARGIN - EVOLUTION

	Expost Margin (1)	Expost Margin Trend (2)	Price-Cost Margin (3)	Costs Pressures (4)	Utilization
1958	0.1942	0.2493	0.1942	-	0.735
1959	0.2015	0.2489	0.2120	0.0680	0.780
1960	0.2224	0.2485	0.2033	0.0830	0.825
1961	0.2338	0.2481	0.1881	0.0715	0.840
1962	0.2450	0.2477	0.2069	0.0600	0.900
1963	0.2871	0.2473	0.2099	0.2540	0.795
1964	0.2503	0.2469	0.1594	0.1771	0.825
1965	0.2617	0.2465	0.2852	0.0820	0.795
1966	0.2237	0.2462	0.2088	0.1353	0.795
1967	0.2245	0.2458	0.2381	0.0931	0.750
1968	0.2441	0.2454	0.1599	0.1572	0.795
1969	0.2732	0.2450	0.2018	0.0242	0.780
1970	0.2823	0.2446	0.1211	0.1632	0.795
1971	0.2951	0.2442	0.1697	0.0787	0.825
1972	0.2860	0.2438	0.1804	0.1325	0.840
1973	0.2596	0.2434	0.1918	0.1412	0.900
1974	0.2957	0.2430	0.2313	0.3373	0.885
1975	0.2843	0.2426	0.3119	0.1870	0.765
1976	0.2908	0.2423	0.2022	0.3229	0.810
1977	0.2790	0.2419	0.1457	0.2654	0.810
1978	0.2514	0.2415	0.1567	0.1924	0.885
1979	0.2913	0.2411	0.2171	0.2355	0.900
1980	0.2266	0.2407	0.3311	0.1921	0.840
1981	0.2254	0.2403	0.2512	0.2954	0.735
1982	0.2010	0.2400	0.2334	0.2697	0.675
1983	0.1836	0.2396	0.1863	0.2346	0.630
1984	0.1860	0.2392	0.2196	0.2334	0.690
1985	0.2067	0.2388	0.2709	0.2438	0.735

SOUCE: Author's calculations
NOTES:
(1) (VALUE ADDED-LABOUR EARNINGS-PROFITS)/CAPITAL STOCK
(2) LOGARTHMIC TREND OF THE EXPOST MARGIN
(3) PROFIT MARGIN CALCULATED TAKING IN ACCOUNT THE DIFFERENCES BETWEEN PRICES AND COSTS
(4) INDUSTRIAL COSTS

CHART 4.3.–1

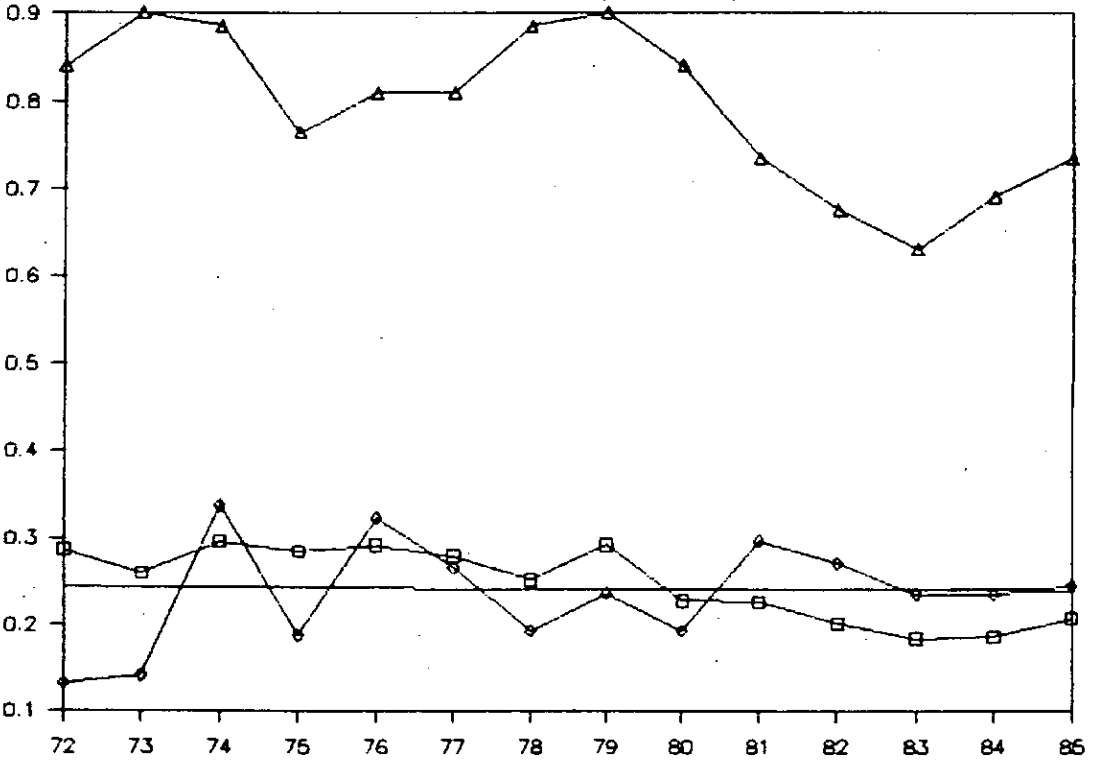
PROFIT MARGIN ANALYSIS (1958–1971)



□ Expost Mg. —— Trend ◇ Costs △ Utiliz.

CHART 4.3.–2

PROFIT MARGIN ANALYSIS (1972–1985)



□ Expost Mg. —— Trend ◇ Costs △ Utiliz.

4.2.2.2. The determinants of capacity utilization

We now complete our consideration of the role of capacity utilization in the deterioration of profitability by focusing on the importance of demand among its determinants [84]. From the evolution of both capacity utilization and demand and supply factors affecting the level of production [85] we infer that supply factors account for capacity underutilization in 1959 and 1961 (through credit restriction), and in 1965 and 1967 (due to input import restriction). Therefore, except these years and 1962, 1973 and 1979 when the level of output was limited by capacity, this level was determined by the level of demand. This is particularly clear for 1974-82 when the foreign exchange constraint was not binding [86], and output fluctuations replicate those of aggregate income with the increased magnitude exhibited after the 1967-73 expansion. This illustrates the important role played by aggregate demand at a stage in which exchange restrictions did not operate [87].

4.3. THE DETERIORATION OF THE PROFIT MARGIN

We now concentrate on the erosion of firm's ability to pass cost pressures into price increases underlying the deterioration of the profit margin of the sector. The first section focuses on these cost pressures, while the second one discusses that erosion. The final section presents the results of the estimations of prices and wages equations.

4.3.1. COST PRESSURES

4.3.1.1. Costs and Prices.

We consider cost pressures from two perspectives: first, the evolution of components m and y of the profit margin in terms of the cost structure in production accounting; second, the evolution of price indexes in terms of the price equation.

Although neither indicate a consistent long-term severe deterioration of the gross profit margin, both analyses show significant deteriorating effects from 1972 onwards. The basic facts concerning the evolution of the cost structure (Tables A.4.3-2 and A.4.3-3) are the modest magnitude of the increase in the share of material costs, and the growing share of general costs compared to labour costs [88].

As for the price indexes in the price equation, although during the first half of the seventies prices managed to keep pace with costs, from 1976 onwards they lagged behind so that a reduction in the margin in terms of price indexes took place as a result of the falls of 1976 to 1978 and 1981 to 82 (Tables 4.3-1) [89]. Meanwhile, within the framework of the price equation (i.e. introducing productivity growth: see Table 4.3-4) we obtain the long-run decreasing trend with the breaking down of the previous trend from 1976 onwards. Similarly, the greater markup instability of the seventies as well as the reduction between the sixties and seventies were among the basic results of a previous estimation of the price equation for the 1958-80 period (Chica. 1983b) [90].

4.3.1.2. Wages and Prices.

In order to emphasize the role of labour costs in the deterioration of the margin, we consider first the effect of the wage push, and secondly, the determinants of this push. After a deterioration in the first half of the seventies, the share of wages in income rose from 1978 onwards as a result of substantial increases in 1978 and 1982 [91]. This pressure upon the share of profits in income (value added) reveals wages increases ahead of productivity growth during the second half of the seventies (see Table 4.3-2) [92].

To provide a background for the analysis of this profits squeeze process, we consider the evolution of wage resistance in terms of two indexes. First, the wage resistance coefficient, defined

as the ratio of the actual nominal wage to the desired nominal wage obtained by inflating the target real wage by the expected rate of inflation. It measures the bargaining power of workers regarding their ability to obtain a nominal wage equivalent to the higher real wage gained in the past (which here is used as a yardstick for the desired real wage). Secondly, the wage achievement coefficient, defined as the ratio of the actual real wage to the target real wage. It is a measure encompassing both that bargaining power and the degree of precision of their expectations in predicting inflation [93]. The wage resistance coefficient (see Table 4.3-3.) reached its highest level in 1968, deteriorated from 1972 to 1977, and recovered to reach its highest level (since 1970) in 1984. The wage achievement coefficient followed the same pattern until 1979; however its consistent growth until 1982 meant that its 1984 level is not much higher than in 1982 [94]. Therefore, after a deterioration from 1968 to 1977, both bargaining power and price expectations adjusted to the accelerated inflation of the seventies. In effect, the inertia of the new expectations, in the face of the deceleration of inflation in the early eighties, brought about achievement coefficients greater than one from 1979 to 1984 [95].

We now focus on wage reaction to the acceleration of price inflation of the early seventies, so emphasizing the role of inflation in food prices in the causal chain "consumer prices-nominal wage-industrial prices". We observe the following (see Table 4.3-3.). First, the deterioration of the consumption real wage which begins in 1971 and deepened in 1977, is clearly explained by wage increases in 1973-77 lagging behind consumer prices affected by food price inflation [96]. Secondly, the large increases in nominal wage inflation in 1974, 78 and 80 were lagged reaction to these increases; the increase of 1982 took place in the absence of previous inflationary explosions. Thirdly, industrial price reactions took place in the same years, except in 1978 - when they lagged behind until 1979-, and in 1982. Finally, both industrial workers and capitalists suffered

an income loss vis-a-vis the agricultural sector, the former in 1977 and the latter, consequently, one year later. The real consumption wage deteriorated until 1977, in spite of increases in real product wage in 1976, due to food prices inflation in 1977. Thus, the real consumption wage started to recover by 1978 when workers managed to pass the cost on to the capitalists, whose ability to increase prices deteriorated. This recovery was brought about by the adjustment of expectations and wage settling structures to the acceleration of inflation from 1972, adjustment which culminated in the reaction to food price inflation.

4.3.2. THE DETERIORATION OF THE PROFIT MARGIN

We first examine how cost pressures combined with an erosion of the transmission capacity into prices to deteriorate the gross profit margin. We then concentrate on the effect of indirect taxes and interest cost pressures upon the net profit margin. Finally, we consider the distributional shifts implied by the profit squeeze brought about by these processes.

4.3.2.1. The erosion of price reaction.

We now concentrate on the erosion of firm's ability to pass cost pressures into price with the cost pressures of 1976-78. Three factors affecting the degree of monopoly (via the markup ex ante or the margin ex post), contributed to the erosion of the profit margin: demand conditions, wage resistance, and import competition.

With regard to the relationship between the evolution of demand and that of the margin, three points must be stressed. First, the short-run movements on which we concentrate took place against a background of a slowdown in demand growth and a falling trend in the margin [87]. Secondly, up to 1971 and again from 1979 onwards, the margin behaved in a procyclical manner. Thirdly, a complicated pattern of behaviour emerged with the demand fluctuations and various shocks of the intermediate period, with

Kaleckian mechanisms operating in 1973-75 and 1976 [98]. Thus, the erosion in the transmission capacity worsened in this period with the deterioration of the margin following the previous demand contraction in 1976, and coinciding with the stagnation of demand for manufacturing during the Dutch Disease episode of 1977. The continuation of this deterioration in 1978 can not be explained in terms of demand conditions (which were clearly expansionary) without looking at the supply side; a significant increase in the wage resistance coefficient coincided with a substantial expansion of M in 1978. Finally, a combination of both demand and supply factors contributed to the deterioration of the margin in the early eighties, when the recession coincided with new increases in both imports and the wage resistance coefficient. This interpretation is supported by the combination of cost and demand movements (see Charts 4.3-1 and 4.3.-2) in the context of the breakdown of the trend of the expost margin (which may be considered as an index of the exante mark-up) during the seventies (Table 4.3-4) [99]. Thus, the greater instability and deterioration of the margin from 1974 onwards was associated with increased demand fluctuations and cost shocks. The initial increase [100] was reversed in 1976 and in the next two years of the coffee boom: the sluggishness of prices in the face of the pressure from domestic raw materials costs in 1977 was linked to the contractionary symptoms of the Dutch Disease syndrome; while in 1978 the demand effect of the combination of the wage rise, the fall in the price of food, and the expansionary impact of the coffee boom, was unable to compensate for the cost effect of that rise, and the profit margin continued to decrease. Finally, after recovering in 1979 stimulated by the effect of 1978 demand increase upon entrepreneurial expectations, the margin deteriorated pari passu with the deepening of the demand crisis of the early eighties.

Concerning the role of demand conditions in deteriorating the gross profit margin, expectations determined by previous experience were also important. The worst deterioration took place when perception of demand conditions remained pessimistic

as projection of past performance prevailed over the effect of the coffee boom [101]. As for the crucial role of wage resistance, whereas the erosion of the wage resistance coefficient in 1973-74 allowed firms to partially transmit input cost pressures, they were unable to do so when the recovery of this coefficient in 1978 complemented the input cost pressures of 1977 [102]. Two conclusions emerge about the role of demand and wage resistance in the deterioration of the profit margin. First, the Kaleckian underconsumist process of 1973-75 was followed by a profit squeeze from 1976 onwards which deepened during the demand stagnation of the beginning of the eighties. This transition took place against the background of a declining trend of the profit margin from 1972. Secondly, the initial stages of this trend coincided not only with the erosion of wage resistance but also with the slackening of productivity growth. The attempt by firms to ameliorate the erosion of the margin in the face of accelerating inputs costs inflation by means of wage erosion rather than productivity growth back-fired when the workers reacted to the deterioration of their purchasing power.

4.3.2.2 The erosion of the net profit margin

The deterioration of the net profit margin was substantially more severe than that of the gross profit margin. The increase in the weight of interest costs, general costs and indirect taxes in the cost structure was already mentioned in the analysis of production accounting (See Tables A-4.3.2. and A-4.3.3.). Particularly important were increases in interest costs in 1974 and 1982, and indirect taxes in 1974, 1976, and 1978. With regard to the former, section 2.3. considered factors which generated the explosion in financial costs, as well as the impact of this explosion on firms [103]. As for the increase in indirect taxes, the fiscal reform of 1974 shifted the fiscal burden to these taxes: this claim on value added subsequently grew to almost one fifth of it under the Lopez government (1974-78).

4.3.3.2.3. Redistribution and profit squeeze.

We conclude the analysis of the deterioration of the net profit margin considering the consequent distributional shifts. The state and the financial system managed to increase their claims on value added through increases in taxes and financial costs. The agricultural and external sectors profited from the increases in inputs costs. As for workers, a shift from profits to wages took place as a result of the wage resistance of the early eighties. However, the contribution of food price increases to the wage reaction of the second half of the seventies point to a transfer of income from the industrial to the agricultural sector. Thus, cost pressures and income effects upon demand, as well as the transfer of income via the wage reaction mechanism, lay behind the deterioration of manufacturing share in GDP vis-a-vis agriculture considered in section 3.3 [104/].

4.3.4. ECONOMETRIC RELATIONS

4.3.4.1. Introduction

The hypotheses underlying the analysis of the profit margin are either of a general or of a specific type. General hypothesis, are the influence of costs (vis-a-vis demand) upon prices, and price expectations (vis-a-vis unemployment) upon wages, indicating the presence of postkeynesian structures. Specific hypothesis refer to transformations in these structures linked to the deterioration of the profit margin, such as a fall in the sum of the elasticities of coefficients of the different costs in the price equation and an increase in the coeffecicient of price expectations in the wage equation.

The following two sections include results of estimations carried out with both traditional methods and the cointegration methodology. In the latter we follow the EG2S with both annual and quarterly data including, as a preliminary step in the first stage corresponding to the CR, the test to establish the level of integration of the relevant series. In the price equation,

TABLE 4.3.-5
PRICE FUNCTION (ANNUAL: RATES OF GROWTH)

	VD	PERIOD	R2-BAR	DW	RSS	AC	CONST	DLVC	DLX	DLIN	DLIM	DLIM	DLE	DLB	U	DGDP	DLIN(-1)	DLP(-2)	M1	DLP(-1)
1	DLP	1950-85	0.8224	1.86	0.027	X	-0.019		0.226	0.403	0.164	0.240	0.054			-.1008				
							(-1.153)		(3.234)	(4.665)	(2.040)	(2.501)	(1.495)			(-1.034)				
2	DLP	1950-85	0.8233	1.9	0.025	X	-0.027		0.244	0.366	0.170	0.236	0.047			-.0512				0.088
							(-1.344)		(3.159)	(3.411)	(1.908)	(2.125)	(1.206)			(-.414)				(0.631)
3	DLP	1950-85	0.7998	1.87	0.030	X	-0.017		0.207	0.418	0.158	0.329		-0.154					-.000	
							(-0.854)		(2.744)	(3.690)	(1.165)	(2.708)		(-0.627)					(-.180)	
4	DLP	1950-85	0.7995	1.88	0.030	X	-0.014		0.203	0.409	0.141	0.331		-0.184						
							(-0.727)		(2.880)	(4.144)	(1.512)	(2.930)		(-1.046)						
5	DLP	1950-85	0.8033	1.88	0.030	X	-0.153		0.196	0.467	0.208	0.273			.00181					
							(-1.407)		(2.760)	(5.506)	(2.162)	(2.877)			(1.259)					
6	DLP	1950-85	0.6873	1.87	0.040		0.011			0.443	0.259	0.153	0.030				0.236	0.059		-.222
							(0.360)			(3.209)	(1.964)	(1.104)	(0.667)				(1.394)	(.344)		(-.906)
7	DLP	1950-1973	0.8574	2.31	0.0597		-0.029		0.290	1.199	0.159	-0.051		0.274		0.180				-0.476
							(-0.646)		(3.213)	(3.682)	(0.656)	(-0.351)		(.748)		(1.034)				(-1.693)
8	DLP	1950-1973	0.8703	1.93	0.0051		-0.010			0.887	0.310		0.050				0.571	0.266		-0.878
							(-0.380)			(3.367)	(1.760)		(1.565)				(1.629)	(1.117)		(-2.960)
9	DLP	1974-1985	0.9998	1.94	.0000	H	0.188		0.348	0.0056	-0.053	-0.142		-0.484		-1.347				
							(25.532)		(65.915)	(0.484)	(-5.980)	(-6.177)		(-39.607)		(-20.387)				
10	DLP	1974-1985	0.8736	2.35	0.0035	H	0.208		0.361	0.195	-0.111	-0.414		-0.201		-1.800				
							(1.459)		(3.488)	(1.316)	(-0.838)	(-0.931)		(-1.221)		(-2.948)		-.522		
11	DLP	1974-1985	0.8259	2.20	0.0054		0.178			0.214			0.222					(-.746)		
							(3.474)			(2.483)			(2.794)							0.199
12	DLP	1950-1973	0.6317	2.3341	0.0064	X	-0.0049	0.899				0.186		-0.1774						(1.279)
							(-0.265)	(6.048)				(1.417)		(-0.9123)						
13	DLP	1974-1985	0.0440	2.3429	0.0103	X	0.194	0.212				-0.058		-0.304						
							(2.246)	(1.317)				(0.216)		(-1.059						

DLP INDUSTRIAL PRICES (ANNUAL: RATES OF GROWTH)
DLVC VARIABLE COSTOS (ANNUAL: RATES OF GROWTH)
DLX EXPORTS PRICE INDEX (ANNUAL: RATES OF GROWTH)
DLIN NATIONAL INPUTS PRICE INDEX (ANNUAL: RATES OF GROWTH)
DLIM IMPORTED IMPORTS PRICE INDEX (ANNUAL: RATES OF GROWTH)
DLIW WAGE INDEX (ANNUAL: RATES OF GROWTH)
DLE ENERGY PRICE INDEX (ANNUAL: RATES OF GROWTH)
DLB PRODUCTIVITY (ANNUAL: RATES OF GROWTH)
U CAPACITY UTILIZATION
DGDP GROSS DOMESTIC PRODUCT
• DLIN(-1) NATIONAL INPUTS PRICE INDEX (ANNUAL: RATES OF GROWTH) LAGGED ONE PERIOD
M1 MONEY SUPPLY
DLP(-1) INDUSTRIAL PRICES (ANNUAL: RATES OF GROWTH) LAGGED ONE PERIOD
DLP(-2) INDUSTRIAL PRICES (ANNUAL: RATES OF GROWTH) LAGGED TWO PERIODS

TABLE 4.3.-6
PRICES EQUATION (QUARTERLY: ANNUAL RATES OF GROWTH)

	VD	DW	RSS	R2-BAR	AC	CONST	DLINT	DLINT	DLWT	DLET	DLBT	M1	DGDP	UT	DLINT (-1)	DLINT (-1)	DLWT (-1)	DLET (-1)	DLINT (-2)	DLINT (-2)
1	DLPT	1.76	0.02	0.8527	X	0.062 (2.273)	0.241 (2.61)	0.094 (1.704)	-0.003 (-.036)	0.087 (1.858)	-0.024 (-0.904)		0.000 (0.735)							
2	DLPT	1.76	0.02	0.8634	X	0.074 (3.080)	0.314 (3.56)	0.143 (2.839)	0.127 (1.355)	0.050 (0.962)	-0.024 (-0.913)	-0.0001 (-2.297)								
3	DLPT	1.72	0.02	0.8545	X	0.114 (2.184)	0.248 (2.67)	0.082 (1.582)	-.0031 (-.036)	0.105 (2.204)	-0.001 (-0.016)			-0.052 (-1.049)						
4	DLPT	2.08	0.01	0.9011		0.048 (2.593)	0.393 (3.43)	0.093 (1.166)	0.240 (1.122)	0.019 (0.286)	-0.021 (-0.535)	-0.0000 (-0.471)			-0.109 (-0.826)	-0.167 (-1.813)	-0.024 (-0.094)	0.038 (0.489)	0.026 (0.188)	0.209 (2.047)
5	DLPT	1.84	0.02	0.8554		0.029 (1.579)	0.304 (4.28)	0.041 (0.668)	0.0086 (0.1034)	0.069 (1.403)	-0.006 (-0.145)	-0.0000 (-0.491)				-0.134 (-1.708)				0.249 (3.593)
6	DLPT	1.98	0.02	0.8622	X	0.154 (4.287)	0.375 (3.94)		0.095 (0.936)		-0.006 (-0.206)				-0.0073 (-.075)					0.127 (2.262)

	VD	DW	RSS	R2-BAR	AC	CONST	DLWT (-2)	DLET (-2)	DLINT (-3)	DLINT (-3)	DLWT (-3)	DLET (-3)	DLINT (-4)	DLINT (-4)	DLWT (-4)	DLET (-4)	DLPT (-1)	DLPT (-2)	DLPT (-3)	DLPT (-4)
1	DLPT	1.76	0.02	0.8527	X	0.062 (2.273)											0.293 (2.103)			
2	DLPT	1.76	0.02	0.8634	X	0.074 (3.080)											0.102 (0.700)			
3	DLPT	1.72	0.02	0.8545	X	0.114 (2.184)											0.276 (2.003)			
4	DLPT	2.08	0.01	0.9011		0.048 (2.593)	0.306 (1.373)	-0.068 (-.814)	-0.029 (-0.234)	0.067 (0.564)	-0.151 (-0.650)	0.037 (0.457)	-0.015 (-.124)	-0.171 (-1.921)	-0.255 (-1.150)	0.490 (0.696)	0.447 (2.413)	0.306 (1.267)	-0.227 (-0.976)	-0.216 (-1.205)
5	DLPT	1.84	0.02	0.8554		0.029 (1.579)							-0.235 (-5.372)				0.590 (7.536)			
6	DLPT	1.98	0.02	0.8622	X	0.154 (4.287)							-0.186 (-2.460)	-0.021 (-0.349)						

DLPT INDUSTRIAL PRICES (QUARTERLY: ANNUAL RATES OF GROWTH)
DLINT NATIONAL INPUTS PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH)
DLINT IMPORTED INPUTS PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH)
DLWT WAGE PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH)
DLET ENERGY PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH)
DLBT PRODUCTIVITY (QUARTERLY: ANNUAL RATES OF GROWTH)
M1 MONEY SUPPLY
DGDP GROSS DOMESTIC PRODUCT
UT QUARTERLY CAPACITY UTILIZATION
DLINT(-1) NATIONAL INPUTS PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED ONE PERIOD
DLINT (-1) IMPORTED INPUTS PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED ONE PERIOD
DLWT (-1) WAGE PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED ONE PERIOD
DLET (-1) ENERGY PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED ONE PERIOD
DLINT (-2) NATIONAL INPUTS PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED TWO PERIODS
DLINT (-2) IMPORTED INPUTS PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED TWO PERIODS
DLWT (-2) WAGE PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED TWO PERIODS
DLET (-2) ENERGY PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED TWO PERIODS
DLINT (-(-3) NATIONAL INPUTS PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED THREE PERIODS
DLINT (-(-3) IMPORTED INPUTS PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED THREE PERIODS
DLWT (-3(-3) WAGE PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED THREE PERIODS
DLET (-3(-3) ENERGY PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED THREE PERIODS
DLINT (-(-4) NATIONAL INPUTS PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED FOUR PERIODS
DLINT (-(-4) IMPORTED INPUTS PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED FOUR PERIODS
DLWT (-4(-4) WAGE PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED FOUR PERIODS
DLET (-4) ENERGY PRICE INDEX (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED FOUR PERIODS
DLPT (-1) INDUSTRIAL PRICES (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED ONE PERIOD
DLPT (-2) INDUSTRIAL PRICES (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED TWO PERIODS
DLPT (-3) INDUSTRIAL PRICES (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED THREE PERIODS
DLPT (-4) INDUSTRIAL PRICES (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED FOUR PERIODS

according to the markup theory of prices, we expect the coefficient for the variable cost index (cv) to be close to one, that for productivity (B) to be close to minus one, and that for demand (D) to be close to zero. Or, in terms of the EG2S, we expect (p, cv, B) to be a cointegrating vector, while D should have its influence limited to the ECM. A third section presents the results of the estimation of a simultaneous system of the price and the wage equation.

4.3.4.2. The price equation.

The main results obtained with the traditional methods [106] for the price equation are (Table 4.3-5). 1) The substantially greater influence of costs compared to demand is confirmed by the size of cost coefficients in contrast to the insignificance or perverse sign of the index of demand. 2) Cost of material inputs have greater influence (the domestically produced more than the imported), while labour costs sometimes have greater influence than the imported [106], and energy costs only occasionally are significant (regressions 1 to 6). 3) Neither capacity utilization [107] nor productivity are statistically significant (regressions 3 to 5). 4)) Whereas the export prices are significant [108], the deviation of GNP from its trend and M1 (as index of demand) are not significant (regressions 1 to 3). 4) Experiments for the 1958-73 and 1974-85 subperiods indicate a deterioration in the weight of all costs, except energy whose influence increases (regressions 7 to 11) [109]. A fall in the sum of cost coefficients is then obseved (regressions 12-13). 5) Experiments with quarterly data show (Table 4.3-6): whereas national material inputs consistently have a strong influence, imported material inputs and energy are statistically significant only accasionally, and wages never do so: only imported inputs have a statistically significant influence when lagged [110], this occurring when introduced with two lags; neither capacity utilization nor M1 have the expected positive sign.

For the CI methodology we first test for the annual case. Before

undertaking the CR we must consider the results of the test for unit roots: according to these (Table A.4.3-5) whereas p, cv, and B, being I(1) can be introduced in a CR, capacity utilization (used as a proxy for D) being I(0), must be left for the ECM. For the CR we have

$$lp = 0.3208 + 0.9977\ lcv - 0.2064\ lB$$
$$R^2=0.9993 \qquad CRDW=1.7838 \qquad DF=-4.4959 \qquad ADF=-4.7235$$

This result allows us to reject the non CI hypothesis i.e. to accept the existence of a long-run equilibrium relationship among p, cv and B. If we introduce M1 as a demand indicator we obtain no improvement in the statistics:

$$lp = 0.3094 + 0.9915\ lcv - 0.5060\ lB + 0.00526\ lM1$$
$$R^2=0.993 \qquad DW=1.7764 \qquad DF=-4.4780 \qquad ADF=-4.6792$$

This result highlight the of influence of demand on the long run behaviour of prices. For the ECM we have

$$dlp = 0.0644 + 0.0376dlp_{-1} + 0.9250dlcv + 0.0529dlcv_{-1} - 0.5612dlB$$
$$(0.2953) \quad (0.1256) \quad (7.1199) \quad (0.1805) \quad (-3.752)$$
$$+ 0.2429dlB_{-1} - 0.00067u - 0.9579z_{-1}$$
$$(1.2747) \quad (-0.3031) \quad (-2.2596)$$
$$R^2=0.8423 \qquad DW=2.0076 \qquad DF=-4.8714 \qquad ADF=-3.8233$$

confirming a similar lack of influence in short-run behaviour, as well as showing that although prices adjust to cost movements with no significant lag, disequilibrium from the previous period strongly influences the short run dynamic of prices.

The test with quarterly data does not provide clear results: it is possible now (Table 4.3.7) that cv is I(2), and even assuming that it is I(1), the rejection of non CI now takes place with a lower level of confidence.

$$lp = -0.0357 + 1.0687\ lcv - 0.1611\ lB$$
$$R^2=0.9986 \qquad DW=0.3742 \qquad DF=-2.8031 \qquad ADF=-2.3094$$

TABLE 4.3.-7-A
WAGE FUNCTION (ANNUAL RATE OF GROWTH)

	VD	SUBPERIOD	R2-BAR	DW	RSS	AC	CONST	ORA	URA	B	PESSD	PESSS	PEAC2	PEAC4	ORA(-1)	URA(-1)	B(-1)	PEMSD(-1)	PEAC2(-1)	WGA(-1)	WAR(-1)
1	WAR	50-95	0.6244	2.07	530.553		20.288		-1.630			1.033									
							(1.807)		(-1.696)			(5.229)									
2	WAR	50-85	0.6335	2.16	517.733		19.633		-1.122					1.139							
							(1.164)		(-1.153)					(5.335)							
3	WAR	50-85	0.5513	1.73	633.867		15.854		-1.461				1.613								
							(1.220)		(-1.375)				(4.447)								
4	WAR	50-95	0.5372	1.81	617.511		10.570		-1.614	1.150			1.477								
							(0.686)		(-1.463)	(0.671)			(3.624)								
5	WAR	50-85	0.8992	2.19	295.349		-7.056		-2.412	-2.721			4.194								
							(-0.367)		(-3.172)	(-0.681)			(4.313)								
6	WAR	50-95	0.7678	2.27	255.130	X	15.506		-0.422		1.052					0.338	7.278		-2.169		-0.416
							(1.965)		(-0.915)		(13.226)					(0.251)	(1.711)		(-2.477)		(-1.583)
7	WAR	50-85	0.6985	1.96	331.470	X	32.964		-0.347								2.493			-27.196	
							(3.404)		(-0.525)			1.103					(3.494)			(-3.980)	
8	WAR	50-85	0.6964	1.96	333.540	X	23.5	0.425				(3.754)					2.073			-43.013	
							(1.132)	(0.365)				1.130					(2.197)			(-4.808)	
9	WAR	50-85	0.7104	2.10	318.150	X	20.950		-0.313			(11.374)					1.881			-40.116	
							(2.342)		(-0.522)				1.673				(1.725)			(-2.694)	
10	WAR	50-85	0.7549	2.14	269.250	X	12.912		-0.501				(11.242)				4.109			-48.244	
							(1.531)		(-0.913)					1.109			(5.243)			(-5.999)	
														(12.354)			3.006			-27.252	
																	4.035			(-3.769)	

TABLE 4.3.-7-B

	VD	SUBPERIOD	R2-BAR	DW	RSS	AC	CONST	ORA	URA	B	PEMSD	PEMSS	PEAC2	PEAC4	ORA(-1)	URA(-1)	B(-1)	PEMSD(-1)	PEAC2(-1)	WGA(-1)	WAR(-1)
1	WAR	64-73	-0.0016	2.41	83.78		67.825		-0.143	-6.334	-0.725										
							(2.073)		(-0.122)	(-1.699)	(-1.366)										
2	WAR	74-84	0.4826	2.24	124.31		20.392		-1.627	0.013	1.912										
							(0.872)		(-0.959)	(0.0046)	(1.660)										
3	WAR	64-73	-0.3423	2.43	93.57		38.900		0.921	-5.856		-0.784									-0.746
							(1.105)		(0.460)	(-1.012)		(-0.952)									(-2.371)
4	WAR	74-84	0.3458	2.20	157.16		42.917		-2.444	0.364		0.948									0.041
							(2.336)		(-1.157)	(0.093)		(1.000)									(0.185)
5	WAR	64-73	-0.4435	2.26	80.50	X	69.979		0.501	-7.381			-1.258								-5.26
							(1.443)		(0.324)	(-1.295)			(-1.073)								(-1.721)
6	WAR	74-84	0.6098	2.08	145.64		31.486		-2.070	0.070			2.169								(0.122)
							(1.935)		(-1.315)	(0.029)			(2.434)								(0.445)
7	WAR	64-73	-0.1388	2.38	16.47	X	47.865		1.584	-1.620	0.118										-0.614
							(0.984)		(1.532)	(-0.255)	(0.097)										(-2.180)
8	WAR	74-84	0.0017	2.32	162.99	X	23.047		-1.864	-2.081	0.731									+1.529	
							(0.486)		(-0.646)	(-0.646)	(0.381)									(-2.661)	
9	WAR	64-73	0.6811	1.95	13.33	X	76.407		1.932	-5.852			-0.784							15.548	
							(3.520)		(3.586)	(-1.874)			(-1.199)							(0.291)	
10	WAR	74-84	0.1525	2.24	169.65	X	38.005		-2.715	0.970			0.131							-35.158	
							(1.347)		(-1.316)	(0.201)			(0.081)							(-4.552)	
																				7.667	
																				(0.169)	

WAR — WAGES (ANNUAL RATES OF GROWTH)
ORA — ANNUAL OCCUPATION RATE
URA — ANNUAL UNEMPLOYMENT RATE
B — PRODUCTIVITY RATE
PESSD — SIMPLISTIC EXPECTATIONS (DESCENDENT, FIVE YEARS: 0.4, 0.3, 0.1, 0.1, 0.1)
PESSS — SIMPLISTIC EXPECTATIONS (SIMPLE AVERAGE, FIVE YEARS)
PEAC2 — ADAPTIVE EXPECTATIONS WITH =0.2
PEAC4 — ADAPTIVE EXPECTATIONS WITH =0.4
ORA(-1) — ANNUAL OCCUPATION RATE LAGGED ONE PERIOD
URA(-1) — ANNUAL UNEMPLOYMENT RATE LAGGED ONE PERIOD
B(-1) — PRODUCTIVITY RATE LAGGED ONE PERIOD
PEMSD(-1) NEAR SIGHTED EXPECTATIONS (DESCENDENT, FIVE YEARS: 0.4, 0.3, 0.1, 0.1, 0.1) LAGGED ONE PERIOD
PEAC2(-1) ADAPTIVE EXPECTATIONS WITH =0.2 LAGGED ONE PERIOD
WAR(-1) WAGES (ANNUAL RATES OF GROWTH) LAGGED ONE PERIOD
WGA WAGE GAP (W/W*) = OBSERVED NOMINAL WAGE/TARGET NOMINAL WAGE

TABLE 4.3.-8
WAGE EQUATION (QUARTERLY: ANNUAL RATES OF GROWTH)

	VD	DW	RSS	AC	CONST	PES2DT	PES3DT	PES2ST	PES3ST	PEA6T	PEA8T	URT	ORT	WGT	PEARI	URT(-1)	ORT(-1)	WGT(-1)	WT(-1)
1	WT	2.57	0.01		0.092		0.152					-0.00139		-0.068					0.781
					(2.759)		(1.589)					(-1.208)		(-2.380)					(8.746)
2	WT	1.93	0.008	X	0.079		-0.012					-0.00071		-0.064					0.947
					(5.143)		(-0.224)					(-1.142)		(-5.453)					(19.098)
3	WT	2.55	0.012		0.096				0.159			-0.00146		-0.071					0.772
					(2.865)				(1.667)			(-1.260)		(-2.478)					(8.504)
4	WT	1.93	0.0076	X	0.079				-0.063			-0.00073		-0.064					0.943
					(4.956)				(-0.122)			(-1.149)		(-5.293)					(18.543)
5	WT	2.34	0.013		0.024		0.127					-0.00075							0.808
					(1.337)		(1.279)					(-0.640)							(8.738)
6	WT	2.34	0.013		0.025				0.119			-0.00740							0.813
					(1.372)				(1.202)			(-0.633)							(8.682)
7	WT	1.91	0.01	X	0.032					0.019		-0.00061							0.858
					(1.303)					(0.365)		(-0.555)							(8.811)
8	WT	1.91	0.01	X	0.032						0.018	-0.0006							0.865
					(1.297)						(0.386)	(-0.545)							(10.133)
9	WT	1.94	0.008	X	0.079	-0.027						-0.00052		-0.068					0.970
					(5.263)	(-0.678)						(-0.896)		(-5.853)					(25.577)
110	WT	2.64	0.013		0.087			0.044				-0.00099		-0.069					0.890
					(2.546)			(0.516)				(-0.866)		(-2.391)					(10.907)
11	WT	1.95	0.007	X	0.084						-0.026	-0.00073		-0.067					0.958
					(5.643)						(-0.893)	(-1.337)		(-5.986)					(30.755)
12	WT	1.95	0.01	X	0.082					-0.025		-0.00067		(0.065)					0.965
					5.728					(-0.895)		(-1.208)		(-6.032)					(25.863)
13	WT	2.04	0.01	X	0.250		0.135						-0.0014					-0.087	
					(1.600)		(0.866)						(-0.133)					(-0.936)	
14	WT	2.05	0.01	X	0.230				0.145			-0.00102						-0.073	
					(2.579)				(0.912)			(-0.635)						(-0.893)	
15	WT	2.05	0.01	X	0.231		0.147					-0.001						-0.074	
					(2.610)		(1.007)					(-0.632)						(-0.914)	
16	WT	2.00	0.01	X	0.177		0.17									0.003		-0.062	
					(1.958)		(1.165)									(1.733)		(-0.769)	
17	WT	2.04	0.01	X	0.244		0.131										0.001	-0.08	
					(1.618)		(0.843)										(0.080)	(-0.899)	
18	WT	1.97	0.01	X	0.232										-0.471	0.002		-0.04	
					(1.942)										(-0.490)	(1.934)		(-0.513)	
19	WT	2.00	0.01	X	0.262							-0.0013			-0.243			-0.053	
					(2.170)							(-0.823)			(-0.253)			(-0.678)	
20	WT	1.99	0.01	X	0.297								-0.0036		-0.149			-0.072	
					(1.775)								(-.379)		(-0.143)			(-0.802)	
21	WT	1.99	0.01	X	0.243										-0.162		0.001	-0.059	
					(1.495)										(-0.159)		(0.113)	(-0.690)	

WT WAGES (QUARTERLY: ANNUAL RATES OF GROWTH)
PES2DT QUARTERLY SIMPLISTIC EXPECTATIONS (DESCENDENT, TWO PERIODS)
PE3DTS QUARTERLY SIMPLISTIC EXPECTATIONS (DESCENDENT, THREE PERIODS)
PES2ST QUARTERLY SIMPLISTIC EXPECTATIONS (SIMPLE AVERAGE, TWO PERIODS)
PEM3ST QUARTERLY SIMPLISTIC EXPECTATIONS (SIMPLE AVERAGE, THREE PERIODS)
PEA6T QUARTERLY ADAPTIVE EXPECTATIONS WITH -0.6
PEA8T QUARTERLY ADAPTIVE EXPECTATIONS WITH -0.8
URT QUARTERLY: ANNUAL UNEMPLOYMENT RATE
ORT QUARTERLY: ANNUAL OCCUPATION RATE
WGT QUARTERLY WAGE GAP
PEARI RATIONAL EXPECTATIONS (ARIMA)
URT(-1) QUARTERLY: ANNUAL UNEMPLOYMENT RATE LAGGED ONE PERIOD
ORT(-1) QUARTERLY: ANNUAL OCCUPATION RATE LAGGED ONE PERIOD
WGT(-1) QUARTERLY WAGE GAP LAGGED ONE PERIOD
WT(-1) WAGES (QUARTERLY: ANNUAL RATES OF GROWTH) LAGGED ONE PERIOD

TABLE 4.3.-9
PRICES AND WAGES SIMULTANEOUS MODEL

A. ANNUAL

	VD	PERIOD	METHOD	CONSTANT	DLVC	DLW	WG	DLUR	DLPC	DLP
1	DLP	1958-85	2SLS	0.044	0.695	0.030				
				(1.577)	(5.195)	(0.170)				
	DLW			-0.642			0.684	-0.230	0.141	0.827
				(-4.677)			(5.378)	(-2.408)	(0.636)	(2.050)
2	DLP	1958-85	3SLS	0.044	0.695	0.030				
				(1.577)	(5.195)	(0.170)				
	DLW			-0.645			0.687	-0.203	0.235	0.723
				(-4.702)			(5.403)	(-2.196)	(0.832)	(0.079)

B. QUARTERLY

	VD	PERIOD	METHOD	CONSTANT	DLVC	DLW	WG	DLUR	DLPC	DLP
3	DLP	1958-85	2SLS	0.105	0.530	0.086				
				(6.092)	(6.026)	(1.803)				
	DLW			0.830			-1.215	0.062	-0.200	1.616
				(3.830)			(-5.915)	(0.953)	(-0.546)	(4.431)
4	DLP	1958-85	3SLS	0.105	0.530	0.086				
				(6.092)	(6.026)	(1.803)				
	DLW			0.609			-1.064	0.039	0.196	1.628
				(2.901)			(-5.270)	(0.636)	(0.565)	(4.496)

DLP: ANNUAL RATE OF GROWTH OF THE INDUSTRIAL PRICES
DLW: ANNUAL RATE OF GROWTH OF THE WAGES
DLPC: ANNUAL RATE OF GROWTH OF THE CONSUMER PRICES
DLVC: ANNUAL RATE OF GROWTH OF THE INDUSTRIAL VARIABLE COSTS
WG: WAGE GAP
DLUR: RATE OF GROWTH OF THE UNEMPLOYMENT RATE

Accordingly, whereas the lagged changes in p and cv have now a clear impact, the disequilibrium from the previous period does not:

dlp =0.0439+ 0.08841dlp-1+ 0.7702dlcv- 0.6868dlcv-1 + 0.1091dlB
(0.7824) (7.6660) (6.3052) (-4.8101) (2.2002)
- 0.0315dlB-1 - 0.0402u - 0.0843z-1
(-0.7468) (-0.6941) (-0.6593)

This means, in comparison with the annual case, that the price adjustment dynamics determined less by the ECM, with lagged changes in costs showing a reversion of a previous overshooting and lagged changes in prices gaining the influence lost by the lagged error from the equilibrium relationship.

4.3.4.3. The wage equation

The main results obtained with the traditional methods for the wage equation are: 1) The greater influence of expected prices compared to the disequilibrium of the labour market is confirmed by the fact that the coefficients of the former are statistically significant more consistently [111]/ (Table 4.3-7). 2) As for expected prices, the superior performance of both the simplistic scheme with the highest number of years included in the lagged structure (5) and the low level of the weighing parameters of the most recent periods in the AE (0.2) points to a rigidity of inflationary expectations in the face of changes in the rate of growth of prices [112]/. 2) Among the indicators of the situation in the labour market, the rate of unemployment performs better than the rate of occupation. 3) As for the wage resistance the wage gap has a greater influence than productivity [113]/ (regressions 11 and 12). 4) The experiments with the 1958-73 and 1974-85 subperiods (Table 4.3.-7-B) indicate the following: the coefficient of expected prices changes towards the expected positive sign; the coefficient of the wage gap changes from the expected negative sign to become positive in the second subperiod. 5) The results of quarterly experiments (Table 4.3-8)

are: the influence of all variables deteriorates substantially relative to the annual case, which expresses the institutional framework of annual wages settling in Colombian industry; inflationary expectations are in general not statistically significant, with the simplistic schemes (particularly including 3 years) performing less poorly than adaptative and rational (ARIMA) schemes [114]; no indicator of the labour market disequilibrium is statistically significant, with the unemployment rate again performing less badly than the occupation rate; the strong influence of the lagged dependent variable manifests a dynamic structure; the current wage gap has a weak influence, which ceases to be significant when properly lagged (regression 14 to 21).

Turning to the results of the CI methodology, we estimate for the annual case (see Table A.4.3-6 for the levels of integration of the series) two CR. The first includes in the cointegrating vector nominal wages (w), consumer prices (pc), and productivity (B as an index of the workers' effort to keep their income share). The second CR adds the unemployment rate (ur).

$$lw = -4.9614 + 1.0417\ lpc + 0.9366\ lB$$
$$(-39.1363) \quad (69.0984) \quad (9.7347)$$
$$R^2=0.9989 \quad CRDW=2.1415 \quad DF=-5.4213 \quad ADF=-1.9236$$

$$lw = -5.0078 + 1.0469\ lpc + 0.8653\ lB + 0.0693\ lur$$
$$R^2=0.990 \quad CRDW=2.2139 \quad DF=-5.6588 \quad ADF=-1.9691$$

The results indicate we can reject the hypothesis of non CI among w, pc and B; the inclusion of ur brings about no improvement in the statistics of the equilibrium relationship.

To move to the ECM relationship we introduce the inflationary expectations, since the abandonment of the long run equilibrium world requires substituting expectations for the actual rate of inflation. We consider expectations generated by various versions of the AE, chosen from among those producing inflationary

expectations with the higher correlation with both actual inflation and wage growth, as follows: two series generated by procedure that overcomes autocorrelation problems (caused by the application of that scheme), using weighting coefficients for the previous period of 0.2 and 0.4 (PEAC2 and PEAC4 stand for expected prices according to a corrected AES with those coefficients); and two schemes including 5 years in the average of past observations (PEM5D and PEM5S stand for expected prices according to a simplistic scheme, the latter generated by simple averaging, and the former with weights decreasing with the number of lags). In addition to inflationary expectations, introduced in differences because they are I(1) (ie the expected prices are I(2)), we introduce ur (in differences for the same reason) and the wage gap (wg stands for the ratio of the actual to the desired wage) as an index of wage resistance. Since the only significant variable is d2lpce in the case of PEAC2, we include exclusively the corresponding ECM equation and that with the next level of significance for the expectations term, i.e. that corresponding to PEM5S:

dlw =-0.1831+ 0.1850dlw-1 + 0.0308d2lpce + 0.3351wg - 0.1034dlur
(-0.6425) (0.6752) (1.6934) (1.1156) (-0.6577)
+0.0546dlur-1 + 0.2814dlB + 0.1547dlB-1 - 0.3090z-1
(0.3643) (0.5889) (0.2807) (-0.5648)
R^2=0.6287 DW=2.2326 (dlpce for PEAC2)

dlw = -0.1171+ 0.2616dlw-1+ 0.2506wg - 0.1437dlur + 0.044dlur-1
(-0.4043) (0.9525) (0.8296) (-0.8923) (0.2845)
+ 0.1249dlB + 0.1713dlB-1 + 0.0190d2lpce - 0.4557z-1
(0.2418) (0.2601) (1.3113) (-0.7194)
R^2=0.5976 DW=1.6550 (dlpce for PEM5S)

This show moderate influence of expected inflation and no influence of either the disequilibrium in the labour market and wage resistance or the previous error from the equilibrium relationship.

Finally, in the quarterly case we are unable to reject the hypothesis of non CI. Although lw and lp are now I(2) (see Table for the level of integration of the series), we can carry out the CR because lw-lp is I(1) as is lB (Hall 1986). It is not possible to reject the hypothesis of nonstationarity for the error term in the following relationship:

$$lw = -6.4958 + 0.3871\ lp - 0.9486\ lB$$
$$R^2=0.5973 \quad CRDW = 0.2954 \quad DF=-1.9190 \quad ADF=-1.0124$$

If we consider that the equilibrium relationship holds in differences rather than in levels, and carry out the CR, we obtain

$$dlw = -0.1884 + 1.1370\ dlp - 0.1515\ dlB$$
$$R^2=0.1169 \quad CRDW=0.6886 \quad DF=-3.2644 \quad ADF=3.3588$$

This result exhibits a R^2 far too low to allow for the rejection of the non CI hypothesis.

Therefore, we conclude that although at the annual level the behaviour of nominal wages can be explained in terms of the evolution of prices, this not is possible at the quarterly level. This result is consistent with the institutional arrangement of mainly annual wage bargaining and setting in the Colombian case [115].

4.3.4.4. The Price-Wages System.

We now consider two aspects of the relationship between prices and wages formation. First, concerning the relative importance of the influence of prices upon wages vis a vis that of wages upon prices, price expectations in the wage equation have higher coefficients than wages in the price equation [116]. Second, regarding the existence of a simultaneous relationship in an econometric sense, the comparison of the results of the estimations with 2SLS and those obtained with 3SLS (Table 4.3.-

9.) does not support the hypothesis of simultaneity.

4.4. PRODUCTIVITY STAGNATION

We now focus on the determinants of the stagnation of productivity growth considered in section 4.2. After analyzing this stagnation in terms of the factors governing productivity considered in section 4.1.3., we concentrate on the technological gap.

4.4.1. EXPLAINING THE STAGNATION OF PRODUCTIVITY GROWTH

According to the model of the dynamism of productivity summarized in equations [4.1.8] and [4.1.15] this is determined by static increasing returns, and dynamic increasing returns expressed by investment activity and the inherited stock of capital. Looking at the stagnation of productivity growth in 1972-78 in terms of these factors, investment activity fell in 1971 and 1974-76, and demand problems contributed from 1975 to 1977. The development of complementarities and other dynamic effects was inhibited by the abandonment of the IS strategy, and the failure to incorporate new technologies in the seventies [117].

We complement this description of the association of these factors in the 1972-78 period with structural evidence from estimations of the productivity function [4.1.15] [118]. In a previous estimation for the period 1958-80 (Chica. 1984), we use a different specification with k (K/L) [119] instead of K_{-1}, and I instead of I_{-1}:

$$\ln\beta = 0.519 + 0.189 \ln k + 0.744 \ln u - 0.0181 \ln I$$
$$(0.286) \quad (1.683) \quad (4.231) \quad (-0.394) \quad R^2=0.918$$

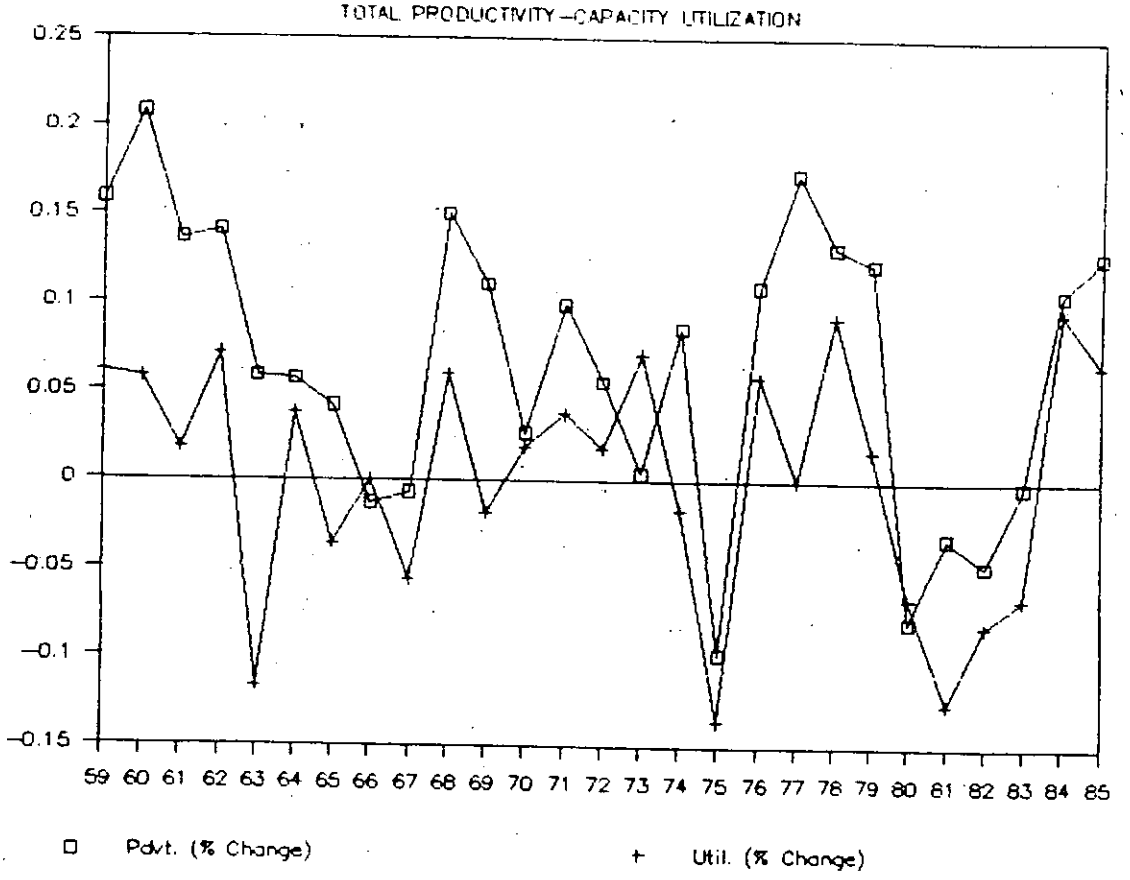
Extending the period until 1982, and using the new specification we now obtain [120]

$$\ln\beta = -4.946 + 0.446 \ln u + 0.148 \ln K_{-1} + 0.1276 \ln I_{-1}$$
$$(-3.714) \quad (1.810) \quad (1.122) \quad (2.420)$$

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CHART 4.4.–1

TOTAL PRODUCTIVITY–CAPACITY UTILIZATION



R=0.938 DW=1.73 CORC

It appears that static increasing returns, expressed in u, have a greater influence than technical progress embodied in I, and that the influence of dynamic increasing returns is not significant [121]. The influence of u is also stressed by its high correlation with total factor productivity obtained by the standard exercise [122].

4.4.3. THE TECHNOLOGICAL GAP

The worsening of the technological gap in Colombian manufacturing during the seventies lies behind the stagnation of productivity growth of the period. The introduction of the new tecnologies of the seventies in Colombian industry lagged behind during this decade [123]. Although new technologies were introduced in the late seventies and early eighties [124], in general the adoption of new technologies was limited to specific points in production lines integrated with traditional processes [125]. With regard to the factors affecting the adoption of new technologies in Colombian industry, on the supply side oligopoly and protection [126], as well as integration of productive processes in non-specialized plants [127] militated against this incorporation. On the demand side structural insufficiency relative to the capacity of the available technology generating scale economies, and cyclical instability slowed further the adoption of new technologies [128].

4.5 CONCLUSION

We started our analysis of the deterioration of profitability conditions of industrial growth by attributing the fall in the rate of profit from 1972 onwards to the combination of the stagnation of productivity growth up to 1978, the erosion of the profit margin from 1975 onwards, and the decrease in the levels of capacity utilization from 1974. After showing that this decrease, as well as the 1978-79 expansion in utilization, was

mainly determined by the behaviour of demand, we considered the determinants of the erosion of the margin and the stagnation of productivity growth.

During the early seventies manufacturing firms managed to protect their margins in the face of increasing input costs, in spite of the stagnation of productivity growth. This was made possible by the erosion of wage resistance and the sluggishness of workers' inflationary expectations, as well as to the experience of the pre-1974 demand expansion. During the middle-seventies this situation started to change. After 1976 firms found it impossible to continue passing on cost increases in the same way. The prolongation of the poor demand conditions of 1974-75 (by the policy of adjustment to the coffee boom) combined with the recovery of wage resistance and the adjustment of workers' inflationary expectations to bring about this change. As for wage resistance, the modification of the conditions of wage settling was completed by the workers' reaction to the 1977 food prices rise, which took place against the background of increasing social unrest. In this way, by 1978 the underconsumptionist phase of 1973-75 process was reversed into a profit squeeze. Meanwhile, after the short-lived recovery of 1978-79 demand conditions deteriorated again, their harmful effect on firms transmition capacity being reinforced by the continuation of the wage resistance recovery and the liberalization of imports.

Econometric evidence supports this interpretation with respect to both the general and specific hypotheses. These general hypothesis, i.e. those which assert the presence of the structures in the formation of prices and wages assumed by the working of the described mechanisms, are the determining role (respectively) of cost pressures and inflationary expectations (as opposed to demand) in this formation. Specific hypotheses, i.e. those related to these mechanisms associated with the erosion of the margin, which also receive statistical support, are the fall in the coefficients measuring the reaction of prices to costs in the price equation, and the increase in the

inflationary expectations coefficient in the wage equation. Similarly, the econometric investigation of inflationary expectations in this equation points to the prolonged period required by their adjustment.

In this way, the econometric evidence points to the need for factors other than cost pressures in order to account for the evolution of prices during the period of the margin deterioration. However, this evidence does not support a pivotal role for demand within these factors. On the wage side, consistently with the above bargaining interpretation, wage resistance seems to have a greater influence on wage inflation than unemployment.

With regard to the stagnation of productivity growth, we considered the contribution of the fall in capacity utilization and in investment activity, and obtained econometric support for the influence of these two factors. A third factor introduced was the weakening of the dynamic effects of the development of complementatities and the incorporation of technical change implied by halting of these processes. However, the influence of the indicator we use to capture these effects, i.e. the capital stock previously accumulated, did not receive econometric support.

APPENDIX

A.4-1. CORE INFLATION

The transition due the expectational adjustment is illustrated by Figure 4.1.1 where $\omega = \alpha (p^e/p)$ and $p = \Omega \omega$, with $\alpha_Q>0$ and $\Omega_Q>0$ only at exceptionally high levels of demand (and $\Omega_Q<$ at low levels), so that normally there is Keynesian unemployment (i.e. due to demand restriction). As p_e approaches p the real wage claim diverges from the real offer (ω/p shifts upwards getting closer to α) aggravating the distributional conflict [129].

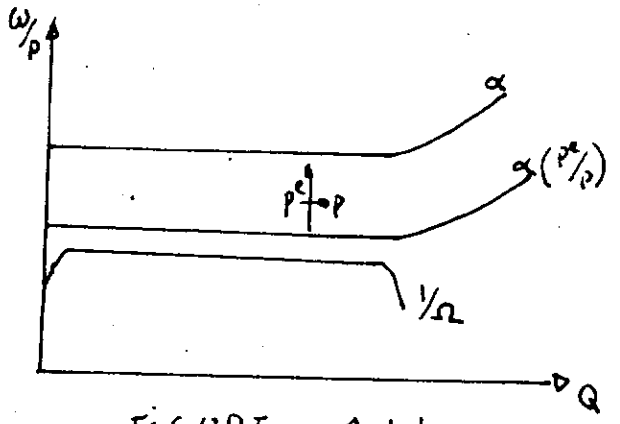


FIGURE 4.1.1

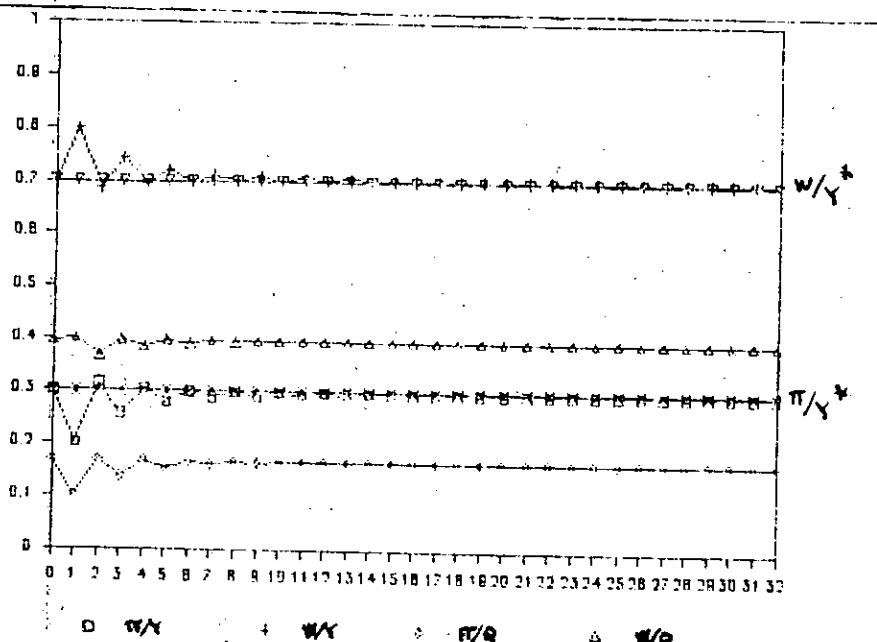


FIGURE 4.1.2 - A

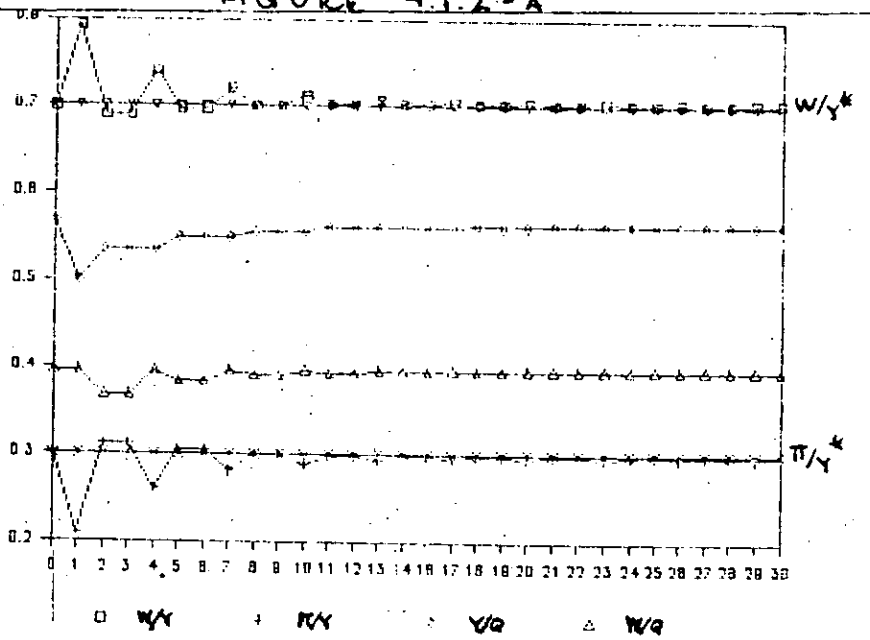


FIGURE 4.1.2 - B

A.4-2. INFLATION AND INCOME DISTRIBUTION IN THE PWS

We consider the distributional impact of increases in the cost of raw materials. We abstract from the loss of income vis-a-vis the suppliers of raw materials, i.e. the deterioration in profitability due to the fall in the share of value added in production (i.e. y in $\pi=myu_T$) in the adjustment process. We consider three points related to the behaviour of the share of profits in industrial income (m in $\pi=myu_T$) in the face of increases in the cost of raw materials [130].

1. In the PWS without p_a and p_r, i.e.

$$w_t = \alpha p_{t-\sigma} \qquad p = m'(lw_{t-\lambda}+ar_{t-\lambda}) \qquad \text{, with } m'=(1+\mu)$$

an increase in r deteriorates m in the adjustment process but the system returns to equilibrium m*. Consider the case $\sigma=\lambda=1$. We have:

$$w_t = m'\alpha l\omega_{t-2}+m'\alpha a r_{t-2} \qquad p_t = m'\alpha l p_{t-2}+m'a r_{t-1}$$

In equilibrium:

$$w^* = \alpha m'a r^*/(1-\alpha m'l) \qquad p^* = m'a r^*/(1-\alpha m'l)$$

and the share of wages in income (n=1-m) is $n^*=\omega^* l/p^*-ar^*$, i.e.

$$n^* = \alpha m'l/[m'(1-\alpha l)-1$$

which is independent of r. However, during the adjustment process capitalists are worse off. Solving the difference equations for w_t and p_t, we have

$$w_t = (\alpha/b_1)Ab_1^t + (\alpha/b_2)Bb_2^t + p^*$$
$$p_t = \quad Ab_1^t + \quad Bb_2^t \quad + w^*$$

with $b_{1,2} = \pm (\alpha m'l)^{1/2}$. Solving for the constants A and B with plausible initial conditions and parameters, and simulating the impact of an increase in r gives the dynamics of m and n illustrated in Figure 4.1.2-A [131].

2. The introduction of a p_a and p_r, i.e.

$$w_t = \alpha p_{t-\sigma} \qquad p_t = m'(lw_{t-\lambda}+ar_{t-\lambda}) \qquad p_r = \delta p_t+(1-\delta)p_a$$

implies that an increase in r deteriorates n^*, because now w reaction to p is weighted by δ. When $\sigma=\lambda=1$:

$$w_t = m'l\alpha\delta w_{t-2} + m'\alpha\delta a r_{t-2} + (1-\delta)p_{a-1}$$
$$p_t = m'l\alpha\delta p_{t-2} + m'l\alpha(1-\delta)p_{a-2} + ar_{t-1}$$

In equilibrium:

$$w^* = [m'\delta ar+(1-\delta)p_a^*] /(1-m'l\alpha\delta)$$
$$p^* = [m'l\alpha(1-\delta)p_a^*+mar^*] / (1- m'l\alpha\delta)$$

and then

$$n^* = \{[m'\delta ar+(1-\delta)p_a^*]1\} / \{m'1\alpha[(1-\delta)p_a^*+ar^*\delta] - r^*(m'a-1)\}$$

which is not independent of r. For the increase in m* we have

$$dn^*/dr < 0 \quad \text{iff} \quad [(p^*-ar^*)1(dw^*/dr)]-\{w^*1[(dp^*/dr)-a]\} < 0$$

which is the case for plausible equilibrium prices and parameters [132]. However when (as in section 3.1.1.) $p_a=r$ the equilibrium distribution is again independent of r:

$$n^* = \{1[m'\delta a+(1-\delta)]\} / \{m'1\alpha(1-\delta)+m'a]-a\}$$

The dynamic of the system is given by

$$w_t = (\alpha/b_1)Ab_1^t + (\alpha/b_2)Bb_2^t + p^*$$
$$p_t = \quad Ab_1^t + Bb_2^t + w^*$$

with $b_{1,2} = \pm (\alpha m'1\delta)^{1/2}$.

3. The lag structure does not affect the equilibrium distribution, although it affects the length of the period of adjustment. From the definition of the steady state n^* it is clear that the this is independent of the lag structure [133]. To illustrate the effect of the lag structure on the adjustment we compare the model in point 1 with one in which $\lambda=1$ but $\sigma=2$:

$$w_t = \alpha p_{t-2} \qquad p = m'(1w_{t-1}+ar_{t-1})$$

We have:

$$w_t = m'\alpha 1\theta_{t-3}+m'\alpha ar_{t-3} \qquad p_t = m'\alpha 1p_{t-3}+m'ar_{t-1}$$

The equilibrium w* and p* are the same:

$$w^* = \alpha m'ar^*/(1-\alpha m'1) \qquad p^* = m'ar^*/(1-\alpha m'1)$$

However, the dynamic of the system is now given by

$$w_t = \alpha[A_1b^{t-2} + A_2(t-2)b^{t-2} + A_3(t-2)^2b^{t-2}]$$
$$p_t = \quad A_1b^t + A_2tb^t + A_3t^2b^t$$

The repeated root of the characteristic equation of the homogeneous system is $b=(\alpha m'1)^{1/3}$. Solving for the constants A_1, A_2, and A_3 with the initial conditions and parameters used in point 1, and simulating the impact of an increase in r gives the dynamics of m and n illustrated in Figure 4.1.2-B. Consistently with the inverse relationship between the number of lags and the rate of inflation, the higher the number of lags the longer the adjustment process.

A.4.3. TABLES.

TABLE A.4.3-1

EVOLUTION OF PROFITABILITY INDICATORS
(QUANTUM METHOD)

	Productivity VA/L	Product Real wage	Gross Benefit Margin	Benefit Rate	utili-sation
1958	4.31	1.40	18.74	13.84	0.735
1959	4.64	1.47	19.44	15.52	0.780
1960	5.14	1.61	21.48	18.65	0.825
1961	5.52	1.75	22.58	20.29	0.840
1962	6.09	1.99	23.64	23.00	0.900
1963	6.25	2.03	27.76	25.68	0.795
1964	6.40	2.15	24.15	24.60	0.825
1965	6.51	2.18	25.26	25.18	0.795
1966	6.44	2.16	21.54	22.05	0.795
1967	6.67	2.37	21.63	22.70	0.750
1968	7.26	2.41	23.57	26.98	0.795
1969	7.34	2.47	26.41	28.25	0.780
1970	7.25	2.61	27.39	29.48	0.795
1971	7.73	2.67	28.56	31.72	0.825
1972	7.50	2.67	26.79	28.38	0.840
1973	7.13	2.50	24.67	25.54	0.900
1974	7.14	2.19	28.44	29.90	0.885
1975	6.65	2.22	25.87	24.64	0.765
1976	6.52	2.37	21.17	20.64	0.810
1977	6.73	2.56	19.27	18.20	0.810
1978	7.34	2.87	16.59	15.65	0.885
1979	8.08	2.93	21.52	23.90	0.900
1980	7.98	3.02	16.65	16.12	0.840
1981	8.39	3.18	17.52	16.62	0.735
1982	8.63	3.44	15.26	12.11	0.675
1983	8.89	3.58	13.31	10.40	0.630
1984	9.71	3.65	13.07	11.62	0.690
1985	10.56	3.49	13.79	15.79	0.735

SOURCE: Author's calculations based on EAM

TABLE A.4.3-2

SHARE OF AGGREGATE VALUE AND MATERIAL COSTS IN PRODUCTION ACCORDING TO COMPONENTS
(Percentages)

	AGGREGATE VALUE									MATERIAL COSTS					
	LABOR EARNINGS			GENERAL COSTS						RAW MATERIAL					
YEAR	Wages	Other	TOTAL	Credit Interest	Others	TOTAL	Profits	Indirect Taxes	TOTAL Aggregate Value	Energy	Foreign	National	TOTAL	Ind. Costs	TOTAL Material Costs
1970	10.5	4.5	15.0	1.9	7.2	9.1	17.7	0.6	42.4	0.8	12.5	39.0	51.5	5.3	57.6
1971	10.4	4.1	14.5	2.2	8.0	10.1	17.9	0.7	43.2	0.7	12.8	37.5	50.3	5.7	56.8
1972	10.1	4.5	14.6	2.5	8.3	10.7	16.7	1.4	43.3	0.8	12.0	38.0	50.1	5.9	56.7
1973	9.2	4.3	13.5	2.8	8.4	11.2	14.6	1.0	40.3	0.7	12.1	40.9	53.0	6.0	59.7
1974	8.1	3.9	12.0	2.9	7.8	10.7	15.7	2.5	40.9	0.7	12.7	39.9	52.6	5.9	58.1
1975	8.3	4.4	12.7	3.4	7.8	11.2	14.1	2.4	40.4	0.7	13.4	39.8	53.2	5.7	58.6
1976	7.9	4.4	12.3	3.2	7.7	10.8	12.9	4.2	40.3	0.8	12.8	40.5	53.2	5.7	58.7
1977	8.3	4.3	12.6	3.4	9.0	12.4	10.7	6.5	42.3	0.8	12.9	37.2	49.9	7.0	57.7
1978	8.4	4.4	12.8	3.2	10.4	13.6	7.0	7.7	42.2	0.9	13.1	36.8	49.8	7.0	57.6
1979	8.6	4.6	13.2	3.2	9.0	12.3	11.3	6.8	43.6	0.9	12.6	36.4	48.0	7.4	56.4
1980	8.0	5.0	13.0	3.8	10.7	14.6	6.4	7.1	43.3	0.9	13.0	35.8	48.8	7.0	56.7
1981	8.2	5.7	13.9	4.3	11.2	15.4	7.6	6.4	43.3	1.1	12.7	35.7	48.4	7.2	56.7
1982	8.4	6.6	15.0	4.8	11.6	16.5	3.9	5.9	41.3	1.3	14.1	36.5	50.6	6.8	58.7

SOURCE: Calculations based on Annual Manufacturer Survey, DANE.
NOTE: The values of the intermediate consumption for 1980-1982 were adjusted. The aggregate value was adjusted for 1982.

TABLE A.4.3-3

SHARE OF THE COMPONENTS OF THE AGGREGATE VALUE EXCLUDING INDIRECT TAXES
(Percentages)

YEAR	LABOUR EARNINGS (1)	PROFITS (2)	GENERAL COSTS (3)	CREDIT INTERESTS (4)	(1)/ [(1)+(2)]	(2)/ [(1)+(2)]
1970	35.9	42.3	25.2	4.5	0.5	0.5
1971	34.3	42.1	24.2	5.2	0.4	0.6
1972	35.1	38.7	26.1	6.0	0.5	0.5
1973	34.7	37.2	28.7	7.1	0.5	0.5
1974	31.0	40.8	27.6	7.3	0.4	0.6
1975	33.4	37.0	29.6	9.0	0.5	0.5
1976	35.5	35.8	31.2	9.1	0.5	0.5
1977	37.3	30.0	33.0	9.5	0.6	0.4
1978	39.4	20.4	38.7	9.5	0.7	0.3
1979	36.3	30.6	34.1	9.2	0.5	0.5
1980	35.6	25.3	41.7	11.3	0.6	0.4
1981	37.9	20.5	42.2	12.1	0.6	0.4
1982	41.6	11.1	45.4	13.7	0.8	0.2

SOURCES: CALCULATIONS BASED ANNUAL MANUFACTURING INQUIRY, DANE.

TABLE A.4.3-4

1.INFLATION RATES

YEAR	P	e	IN	IM	W	CC	CP
1971	0.1071	0.1000	0.0742	0.0594	0.0912	0.0950	0.0773
1972	0.1451	0.1690	0.1261	0.1393	0.1372	0.1031	0.0755
1973	0.1545	0.1418	0.1543	0.1804	0.1100	0.1705	0.2085
1974	0.3696	0.5411	0.4778	0.0663	0.2488	0.3102	0.3542
1975	0.2682	0.2465	0.1698	0.1756	0.2157	0.2001	0.1855
1976	0.2144	0.3579	0.3963	0.1741	0.2577	0.3052	0.3311
1977	0.2078	0.2067	0.3220	0.1439	0.1857	0.2546	0.2627
1978	0.1693	0.2807	0.0905	0.1112	0.4276	0.1890	0.1899
1979	0.2711	0.4314	0.2311	0.0459	0.2768	0.2399	0.2344
1980	0.2798	0.2971	0.0905	0.3573	0.2979	0.2066	0.1883
1981	0.2700	0.3038	0.2958	0.1911	0.3148	0.3194	0.2946
1982	0.2200	0.2824	0.2368	0.0991	0.3395	0.2861	0.2671

2.INDEXES OF PRICES AND COSTS

Years	P	e	IN	IM	W	CC	CP
1970	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1971	1.107	1.100	1.074	1.059	1.091	1.096	1.077
1972	1.268	1.286	1.210	1.207	1.241	1.209	1.159
1973	1.464	1.468	1.396	1.425	1.377	1.416	1.400
1974	2.005	2.263	2.064	1.519	1.720	1.855	1.896
1975	2.542	2.821	2.414	1.786	2.091	2.226	2.248
1976	3.087	3.830	3.370	2.097	2.630	2.905	2.992
1977	3.729	4.622	4.456	2.399	3.119	3.645	3.778
1978	4.361	5.919	4.859	2.665	4.452	4.334	4.496
1979	5.543	8.472	5.982	2.788	5.684	5.374	5.549
1980	7.094	10.989	6.523	3.784	7.377	6.484	6.594
1981	9.009	14.327	8.452	4.507	9.700	8.555	8.537
1982	10.991	18.374	10.453	4.953	12.993	11.003	10.817

Were: P: Price index for industrial producer without coffee
IN: Cost index of national raw materials. Constructed weighting 36 items
IM: Cost index of imported draw materials. Constructed weighting 36 items
e: Index of cost of energy. Prices of combustibles and lubricants. BR.
W: Index of wage rate: earnings/industrial employment
CC: Cost composed of IN,IM,e,W. Weigthed by structure of 1968.
CP: cost of IN,IM,e,W weighted by structure of each year

SOURCES: CN Cuentas Nacionales. DANE.
BR Banco de la Republica.
IEBR Investigaciones Economicas del Banco de la Republica.
EAM Annual Manufacturing Survey. DANE.

TABLE A.4.3-5
RESULTS OF THE UNIT ROOT TESTS
PRICE EQUATION

A. ANNUAL DATA

Variable	Dickey & Fuller	Augmented Dickey & Fuller	Sargan & Bhargava	Integration Order
lp	3.98	-1.26	0.012	I(1)
dlp	-2.75	-2.99	0.880	I(0)
lw	4.37	-0.88	0.173	I(1)
dlw	-3.12	-2.45	1.060	I(0)
u	-2.20	-3.31	0.626	I(0)
du	-4.71	-3.68	1.870	I(0)
lv	3.61	-0.80	0.015	I(1)
dlv	-5.68	-1.86	1.288	I(0)

B. QUARTERLY DATA

Variable	Dickey & Fuller	Augmented Dickey & Fuller	Sargan & Bhargava	Integration Order
lp	0.13	-1.62	0.0031	I(1)
dlp	-2.79	-3.87	0.3125	I(0)
lrv	2.40	-0.31	0.0031	I(1)
dlrv	-2.63	-2.81	0.2495	I(1)
IB	-1.30	-1.72	0.0822	I(1)
dlB	-3.02	-1.67	1.0850	I(0)
u	-4.10	-3.79	1.0715	I(0)
du	-4.00	-3.50	0.8489	I(0)
lu	-4.26	-3.83	1.0865	I(0)
dlu	-4.07	-3.53	0.8701	I(0)
lM1	0.02	-2.35	0.0004	I(1)
dlM1	-3.28	-3.18	0.3432	I(0)

TABLE A.4.3-6
RESULTS OF THE UNIT ROOT TESTS
WAGE EQUATION

A. ANNUAL DATA

Variable	Dickey & Fuller	Augmented Dickey & Fuller	Sargan & Bhargava	Integration Order
lpc	3.643	-0.874	0.0125	I(1)
dlpc	-9.150	-1.840	1.0950	I(0)
lw	0.829	-0.640	0.0200	I(1)
dlw	-4.113	-2.153	1.6032	I(0)
lB	-1.296	-1.720	0.0822	I(1)
dlB	-3.015	-1.673	1.0850	I(0)
ur	-1.703	-2.380	0.3865	I(2)
dur	-2.249	-2.369	0.3541	I(1)
lur	-4.438	-2.817	1.7938	I(0)
dlur	-4.575	-2.577	1.3230	I(0)
wg	-3.648	-1.446	1.3956	I(0)
dwg	-8.226	-4.060	2.3509	I(0)
lpe(PEAC2)	-0.837	-1.859	0.1704	I(1)
lpe(PEAC4)	-1.034	-1.348	0.2238	I(1)
lpe(PEM50)	-1.102	-1.192	0.2474	I(1)
lpe(PEM55)	-0.822	-2.038	0.1260	I(1)

B. QUARTERLY DATA

Variable	Dickey & Fuller	Augmented Dickey & Fuller	Sargan & Bhargava	Integration Order
lpc	2.022	-2.035	0.0040	I(2)
dlpc	1.396	-1.621	0.5259	I(1)
lw	-1.775	-1.066	0.0669	I(2)
dlw	0.224	-1.337	0.7539	I(1)
wg	-1.621	-2.437	0.1181	I(0)
dwg	-7.993	-4.667	2.0958	I(0)
ur	-2.104	-0.751	0.4050	I(0)
dur	-1.205	-6.231	2.3080	I(0)
lpe(PEM3ST)	-3.382	-1.676	0.0551	I(2)
dlpe(PEM3ST)	2.285	-0.703	0.4442	I(1)
lpe(W3K6)	-23.978	-25.987	0.5671	I(0)
dlpe(W3K6)	-22.135	-25.130	0.5751	I(0)

NOTES OF CHAPTER 4

1. In the sense of net output or value added as opposed to (gross) output.

2. There are still two possibilities of treating capital costs and indirect taxes as claims on value added. In the Kaleckian view expressed in equation [4.1.2] below, although the ex ante price rule is set consideing the need to cover these items, they are not included as costs whose variations instantaneous and automatically modify the price rule. Godley (1986) includes rates of indirect taxation (t) and interest (i) in the price rule, say $p=(1+t)(1+i)(1+\mu)(Wl+ar)$, i.e. firms' ability to transmit increments in taxes and interests into prices is assumed.

3. With income (value added)=$W+\Pi=Q-R$. If we leave aside fixed costs, profits $\Pi \equiv Q-W-R$ becomes, according to our price equation

$$\Pi = (1+\mu)(wl + ar)q - (wl + ar)q$$

where W: wages
R:costs of raw materials
q:quantity produced

4. Section 4.1.2.2. considers the evolution of the profit margin in the face of the dynamics of prices and wages brought about by wage resistance.

5. We add * to emphasize the equilibrium character of the profit margin in this equation.

6. See section 4.1.2.1. for the normal price hypothesis and section 4.1.1.3. for the concept of static increasing returns.

7. Using $W/b = (u^*/u)(W/b^*)$.

8. The mark up refers to the ex ante price rule i.e. the percentage addition to prime costs which firms plan to obtain and obtaind only if costs remain at planned levels. The profit margin is the ex post ratio of profits to output corresponding to the effective percentage addition, which diverges from the planned if the firm faces costs surprises.

9. As is illustrated in

$$m = \frac{Y - W_r}{Y} = 1 - \frac{W_r}{Y} = 1 - \frac{W/p}{b-(r/p)(a/l)}$$

$$y = \frac{Q - R}{Q} = 1 - (r/p)\,a$$

In particular, in the absence of raw materials the evolution of m is determined by that of the real cost of labour vis-a-vis productivity; in the absence of technical change (modifying a) the evolution of y depends on that of the real cost of raw materials.

10. Similarly, we have $\beta \equiv y u_T/u^*$, with β labour productivity in terms of aggregate value per worker.

11. In the short period, when no technical change altering b* has taken place,

$$d\epsilon/dL \begin{matrix} > \\ = \\ < \end{matrix} 0 \quad \text{iff} \quad d(q/L)/dL \begin{matrix} > \\ = \\ < \end{matrix} 0$$

12. Stemming from plant size or intersectoral complementarities, maturity of the productive apparatus, learning by the labour force and complementarities between human and physical capital.

13. Sections 1.2. and 4.2. discuss the exceptional character of the supply regime.

14. Given $\tau=b^*/k$, capital productivity introduces within the determinants of profitability the characteristics of the technology expressed in labour productivity at full capacity ($b^*=q^*/L^*$) and capital intensity ($k=K/L^*$).

15. The FCH states that industrial prices, as opposed to those of primary products, are set by the addition of a mark-up over costs in form relatively independent of demand (Kalecki. 1954). In turn, the HPN asserts that prices move with long-run costs, not changing with variations in demand or costs seen as limited to the short-run (Godley, Nordhaus. 1972). Hall & Hitch (1939) conclude from their survey of british firms that prices are fixed by adding a percentage to prime costs to cover overheads conventionally extended to allow for profits. Further econometric evidence in favour of the impact of cost movements as opposed to the insignificance of demand in the determination of prices in the British industry is found in Neild (1963), Godley, Nordhaus (1972), and Coutts, Godley, Nordhaus (1978). For the North American industry, which has a lower degree of concentration than Colombian, numerous studies since Means (1972) have corroborated forms of FCH-NPH (see: Cagan. 1974, and Nordhaus. 1974). Confirmation of these hypothesis for the Italian, Mexican, and Colombian manufacturing sectors is found in Sylos Labini (1980), Ros (1980) and Chica (1983), respectively. For a survey of econometric studies at the aggregate level (as distinct from those of case studies at the firm level) emphasizing the consistency of their results in this direction see Sawyer (1985).

16. Firms operate with constant prime costs due to spare capacity strategy, which allows them to face sudden demand expansions without any market share loss (Steindl. 1976).

17. According to Kalecki the growth capacity of a firm depends on the profits it can generate directly (retained profits) and indirectly (its borrowing capacity depending on its internal funds). Steindl develops the Kaleckian link between demand for investment funds and profit margins stressing how, in a

competitive context, an increase in the profit margin raises the rate of accumulation in the industry.

18. Unit direct costs do not depend on the level of output, are less differentiated than overhead costs, and their changes affect all firms (Sylos Labini. 1979). For empirical evidence see Okun (1981).

19. In the relevant range (where the average variable cost is constant) they become equal.

20. Ample empirical support suggests decreasing average total cost. Surveys of the literature on cost conditions and economies of scale are found in chapter 2 of Hay and Morris (1979) and chapter 4 of Sawyer (1985). For estimates of cost conditions, while the long run statistical cost curves show the predominance of the L shaped pattern of long run average costs, short run studies indicate a pattern of constant marginal cost and declining average cost (Johnston. 1960). The extension of the relevant range is also substantiated by the widely extended application of the concept of relevant range in managerial practice. Dorward (1987) refers to evidence on accounting management showing how, as a result of uncertainty about costs variations, direct costs for decision-making are considered to behave linearly and little interest is shown in marginal costing.

21. These are exemplified by Mean's administered prices (Means. 1972) and by the kinked demand analyses. As in the latter, in the repeated game analysis the tacit collusion enforced through a non cooperative mechanism is destroyed by price cutting. This deviation from the equilibrium outcome is deterred by the conjuncture of the punishment initiating a Bertrand process as a result of which all players are worse off. With regard to the weakness of this approach in determining a unique solution, the fact that a multiplicity of mark-ups are rational conjectures or equilibrium outcomes (Saburian. 1986; Tirole. 1989) indicates the need to consider additional factors (such as market conditions and growth strategies of firms) in order to reduce the set of rational outcomes.

22. According to Okun's (1981) clientele market strategy, the insensitivity of prices to demand movements is the result of firms efforts to buil a clientele by means of the continuity of their offers; by keeping their price tags they give priority to long-run growth of sales over cyclical increases in margins (which could generate unpredictable reactions in clients), and economize transaction and information costs. Similarly, in the menu costs explanation of price rigidities, prices do not continuously adjust due to the costs of corresponding decisions and the consequent sending of catalogues, changing of price tags, and advertising (Tirole. 1989).

23. The recent Neo Keynesian literature provides a strong argument by emphasizing how small menu costs in a world of imperfect competition can give rise to the responses in the level of output to oscillations of demand posed by Keynesian theory.

In this recent recast of the Keynesian view that changes in demand have real effects because nominal wages and prices are rigid, the real effects of nominal demand shocks can be large due to the costs of price adjustment, i.e. because optimizing agents choose to create nominal rigidities (Ball et all 1988). As mentioned in section 3.1.1.1. (referring to Blanchard Kiyotaki, 1987) prices setters refuse to incur the small costs of reducing the business cycle through more flexible prices because the private incentives are small (the profit loss from non-adjustment is second order); consequently, rigidities are magnified at the aggregate level by the infrequency of individual adjustments stemming from menu costs. As Ball et all (1988) stress, imperfect competition plays a crucial role in these Newkeynesian models: it is crucial for private costs of nominal rigidity to be second order and, thus, for small menu costs to cause rigidity; and it is also crucial for demand determination of output with firms setting prices and then meeting demand, so that if demand rises firms are happy to sell more without adjusting their prices because these prices exceed marginal cost.

24. In the managerial approach, the departure from profit maximization stems from the separation of ownership and control and the believe that managers have different objectives than those of the shareholders. In Baumol (1959) managers' objective is the maximization of sales subject to minimum profits, and in Marrris (1964) is to maximize the growth of sales subject to the avoidance of takeover. A good survey of the managerial theories of the firm (including a formal comparison of theories based on growth and profit maximization) is found in chapter 7 of Sawyer (1979).

25. This is assumed by Steindl's built-in reserve capacity argument implying that the firm will not necessarily choose the plant which currently gives the lowest cost, but rather the one which allowes the greatest flexibility.

26. In the pervasive conditions (in manufacturing) of increasing returns and imperfect competition price competition for sales growth requires the minimization (maximization) of costs (profits), and; by the same token, this cost reduction is achieved by an increasing sales.

27. The firms' problem is to maximize the growth of its sales subject to the restrictions imposed by the opportunity frontier (which expresses the need to reduce the profit margin in order to increase the level of demand in the face of competition), and by the finance frontier (which expresses the need to increase the margin to finance growth in sales).

28. Here we concentrate on the product market side of Kalecki's degree of monopoly, leaving the labour market side for the next section.

29. Moving to the industry level from profit maximization at the firm level, in the case of equal marginal and average variable cost and no fixed costs, we have $my = H\alpha/\epsilon$, where H $(=\Sigma s_i^2)$ is

the Herfindahl index of concentration. At the industry level the margin is determined by the degrees of concentration (H) and collusion (α), and by the elasticity of demand (ϵ), which are factors involved in Kalecki's degree of monopoly (Cowling, 1982).

30. In the former the margin is inversely related to the degree to which the firms' competitors shadow its price variation; in Salop's model of spatial competition the profit margin increases with entry cost (and consumer's transportation cost) and decreases with the number of firms (which is inversely related to entry costs under the assumed zero profits condition).

31. In the former the profit margin of the industry is reduced as a result of the effort of technological leaders tow grow at the expense of marginal competitors; in the latter the capacity accumulated by successful firms allows them to keep the margin as low as necessary to deter entry.

32. There is an argument in favour of a greater elasticity of prices responding to cost changes than to demand changes; under conditions of oligopolistic agreements, the former are more acceptable because they are more uniformly perceived by firms in the industry (Okun. 1983).

33. The symmetry in the influence of the independent variables, unemployment and inflationary expectations, on wages growth in the EAPC and in the BPC manifests itself in the observational equivalence which hinders the corroboration of the econometric superiority of one approach over the other.

34. The contrast between the former and the interpretation of the latter is not as clear as the contrast between the bargaining approach and the natural rate interpretation of the Phillips curve. The natural rate analysis as application of the walrasian determination of prices by excess demand requires perfect foresight, absence of monetary illusion, and symmetry in the basic relationship. Further, the very existence of such a natural rate is questioned by K-S characterization of the adjustments in manufacturing: if quantities rather than prices respond to demand changes, U may be reduced without increasing the rate of inflation; if demand and supply are related in a Kaleckian manner, with a reduction in wages deteriorating the former, such a reduction may be ineffective in curbing unemployment.

35. From an analytical viewpoint, the role of aggregate demand in determining the demand for labour, with equilibrium in the labour market affected not only by the real wage but also by effective demand (Sargan.19), calls into question the mapping from the excess demand for labour to U assumed by the labour market disequilibrium approach (Sawyer. 1982). From an empirical viewpoint the frequently found absence of a significant negative relationship w-U (Arestis. 1986. Desai. 1982. Henry. 1982. Lawson. 1987) suggest the superiority of a bilateral monopoly approach over an excess demand one (Sargan.19).

36. The formalization of the dynamics of wages as the addition of a disequilibrium dynamics to a long-run trend in real wages (Sargan.19) is consistent with the compensation which workers obtain for the deterioration of the real wage brought about by price inflation in the pervasive context of institutionalized indexation.

37. As implied by Kalecki's questioning of the effect of unemployment on growth in wages (Desai.1982). The instability of Phillips relationship (which has been found to apply to some economies in some periods) calls into question the concept of an unique Nairu.

38. Additionally, it calls into question Friedman's long-run vertical Phillips curve, i.e. it opens the possibility of a long-run trade off as emphasized in the analysis of Layard Nickel (1985), and Sawyer (1982). As for the ambiguity in the interpretation of the coefficient, its closeness to 1 suggests strong bargaining capability of the workers and/or absence of monetary illusion (Pesaran. 1984).

39. The term for the wage gap may consist of a variety of specifications including the deviation of the real wage from its trend (Arestis. 1986. Lawson. 1987), the gap between the desired and the effective share of wages (Taylor. 1985), and the level of productivity (Khan. 1980)

40. The price equation has been introduced either as part of a simultaneous system together with the wage equation (Samuelson & Solow), or implicit in this equation as reduced form of a PWS (Sargan). See Desai (1985) for a survey of the different treatments of the wages-prices system within the framework of the EAPC.

41. A recent discussion of unemployment in Britain (Layard, Nickel.1985) considers the problem in terms of deviations from an equilibrium between the feasible real wage implicit in the price equation and the target real wage implicit in the wage equation. Thus, if workers' claims exceed the real wage consistent with conditions of technology, unemployment, and labour supply, this disequilibrium express itself in a reduction of aggregate demand bringing those claims into line with equilibrium. Interesting econometric results are the lack of influence of productivity upon prices, and the spread of wage adjustments over two years (behind prices).

42. Robinson's inflation barrier refers to the process resulting from workers' reaction to attempts by capitalists to increase the profit margin beyond what is allowed by the balance of power implicit in the degree of monopoly (Nicolini. 1984).

43. In a system in which the only cost included in prices is wages and the only variable affecting wages is expected prices.

44. This particular case of wages lagging behind prices longer than viceversa, reflects the institutional arrangement allowing firms to fix prices unilaterally while wages are determined collectively by capitalists and workers. Here, as in the Modigliani & Padoa Schioppa model, firms obtain the margin they require and unions reaction against this margin translates into inflation. Rowthorn's aspiration gap and Bacha & Lopez dynamic model of wage indexation considered below are alternative ways of expressing that institutional arrangement.

45. At which p and ω remain constant ($\hat{W}=\alpha\hat{\Omega}W$ and $\hat{p}=\alpha\hat{\Omega}p$), i.e. there is no core inflation.

46. Conversely, lags provide a way out of indetermination for fixed α and Ω for $\alpha\Omega\neq1$ when $\lambda=\tau=0$, without each side foregoing the rule expressed in these coefficients.

47. A rise of ρ in

$$\hat{\alpha} = \rho(\alpha-\omega/p)$$

implies a rise of $\hat{\alpha}$ in $\hat{\omega} = \hat{p} + \hat{\alpha}$. By the same token, if productivity growth stagnates so that (with constant μ) $\hat{\Omega}=-b=0$, the distributional conflict is agravated.

48. In general solving $p_t = \Omega\omega_{t-}\lambda$ and $\omega_t = \alpha p_{t-\sigma}$ we have $p_t = p_o(\alpha\Omega)^{t/\lambda+\sigma}$, and $\omega_t = \omega_o(\alpha\Omega)^{t/\lambda+\sigma}$. Therefore, whatever the lag structure, if maintained, the real wage remains at its initial level $(\omega/p)_t = \omega_o/p_o$. Appendix A.4.2. considers this problem in terms of the impact of a once for all change in the cost of raw materials, and shows that the equilibrium distribution of income is independent from the lag structure. Similarly, during the adjusment process as long as firms manage to compensate for the increases in ω and the reductions in σ by reducing λ, distributional shares remain unaffected (Tarling & Wilkinson. 1985).

49. Section 3.1.1. considers the other side of the double- sided relationship inflation-distribution focusing on the contractionary effect of an increase in the markup. The final effect upon demand crucially depends on the inflationary dynamics which follow, with the effectiveness of workers' reactions playing a decisive role in determining the dynamics of inflation and the impact on demand and distribution. Meanwhile, the intensification of the distributive conflict caused by demand increases results in an acceleration of the rate of inflation. This can be seen as either a displacement beyond the equilibrium point in which the claims of capitalists and workers are consistent (Modigliani & Padoa-Schioppa. Sawyer), or an aggravation of the aspiration gap brought about by demand effects (Rowthorn).

50. Bacha & Lopez consider the case where the wage policy imposes compulsory wage settlements of fixed periodicity, so that the real wage is restored by being reset in accordance with past inflation. From

$\omega = hp + (1-h)\, p_{-1}$, with $h=1-1/2n$ (n the number of readjustments per period), it follows that the average real wage (for the representative worker whose settlements coincide with the extremes of the period) is given by

$w = v^*/(1+p)^{1-h}$ with v^* being the integration constant (interpreted as workers' target real wage under price stability) (Bacha & Lopez. 1986).

51. A relatively well-established stylized fact about the industrial economies is the rigidity of prices, and to a lesser extent wages and real wages, throughout the demand cycle (Blanchard & Fisher. 1989). However, theoretical analyses emphasize the role of demand in the determination of the profit margin: demand operates in the PWS through both the price and wage function with opposite effects on the real wage in each case (Rowthorn. 1977). (At low levels of utilization, increases in the level of output can be consistent with higher feasible real wage for firms: Sawyer 1982).

52. Kalecki's anticyclical degree of monopoly is the result of the combination of the effect through wages with an effect through prices which is the oppposite to the one considered here.

53. This introduces a third party into the conflict between capitalist and workers, i.e. either food or primary inputs producers or foreign suppliers.

52. This operates via its composition effect on the retail price on which unions base their claims.

55. This result emphasized by Kalecki in his analysis of the impact of increases in the price of raw materials on income distribution, depends on the stringent assumption of wage passivity (see Appendix A-4.2).

56. Increases in unanticipated inflation are given by:

$$\Delta p^u = \gamma\rho[\Delta A] = \gamma\rho[(A_u\Delta u + A_{ld}\Delta ld) + (A_t\Delta t + A_f\Delta f)]$$

where: γ: number of bargains per year

ρ: reaction coefficient to the gap between the share of profits negotiated in the wage settlement and that targeted by firms

A: aspiration gap

The two terms in brackets express the factors aggravating the aspiration gap. The first represents the Demand Effect, the influence of capacity utilization on the firms' push and of demand for labour (ld) on the workers' push. The second refers to the Burden effect, the influence of taxes (t) and imports costs (f).

57. In $\Delta ln = (\Delta l\omega - \Delta lp_r) + (\Delta lp_r - \Delta lp) - \Delta lb$ the first term in brackets is the growth in the real wage in terms of wage goods; the second term is the excess of wage goods inflation over manufactures inflation; the third is the growth in productivity.

58. Assuming rational expectations in the steady state, and simplifying Desai's numerator by collapsing some terms into Σ, we have: $\ln^* = \{ \Sigma - bU + \alpha(1-\delta)d\ln p_a \} / [1-\alpha\delta]$
where the denominator expresses crucial conditions for the struggle for income shares.

59. From

$$\hat{(1+\mu)} = d\mu /(1+\mu)$$

and $d\mu/(1+\mu)=(d\mu/\mu)m$ (with $m=\mu/1+\mu$), we have

$$\hat{(1 + \mu)} = \hat{m\,\mu}$$

assuming

$$\hat{\mu} = v_u\hat{u} + v_w\hat{w} + v_r\hat{r}$$

and defining $v'=vm$.

60. An AE scheme can be considered a particular form of an AR of which an ARIMA is a generalization, in the same way that a time series model is in certain circumstances one of the particular possibilities posited by a RE scheme as used by the agent for predictions. The AE hypothesis asserts that the agent revises (linearly) his expectations each period according to his error in the previous period:

$$\hat{p}^e_t - \hat{p}^e_{t-1} = \theta (\hat{p}_{t-1} - \hat{p}^e_{t-1})$$

or

$$\hat{p}^e_t = \theta \hat{p}_{t-1} + (1 - \theta) \hat{p}^e_{t-1}$$

where $\hat{p}^e_t$ stands for expectations for t formed at t-1. Extending this mechanism in the past:

$$\hat{p}^e_t = \theta [\hat{p}_{t-1} + (1 - \theta) \hat{p}_{t-2} + (1 - \theta)^2 \hat{p}_{t-3} + \ldots]$$

$$= \theta \sum_{s=0} (1 - \theta)^s \hat{p}_{t-s-1}$$

which clearly is an AR scheme with strong restrictions on the weighing parameters of previous periods. Naturally, one generalizations to avoid these restrictions (besides the utilization of an Almon method in the identification of the AR scheme) is the use of an ARIMA (p,d,q) model (where p and q are the order of the AR an MA processes, respectively, and d the number of times the difference operator is applied until the representation ARMA (p,q) is appropiate). Then:

$$\hat{p}^{e}_{t} = \phi_1 \hat{p}_{t-1} + \ldots + \phi_p \hat{p}_{t-p} + \epsilon_t + \theta_1 c_{t-1} + \ldots + \theta_q c_{t-q}$$

61. In the same way that the critique of the AE scheme focuses on its neglect of all information other than past prices, from a RE viewpoint an ARIMA scheme restricts the agent to a time series model thereby excluding both alternative specifications and additional current information.

62. From

$$\hat{p}^{e}_{t} = \theta \hat{p}_{t-1} + (1 - \theta) \hat{p}^{e}_{t-1}$$

we have

$$\hat{p}^{e}_{t} = \frac{\theta}{[\,1 - (1-\theta)L\,]} \hat{p}_{t-1}$$

so that the wage equation becomes

$$\hat{W}_t = a + b\,U_t + c_t \frac{\theta}{[\,1 - (1-\theta)L\,]} \hat{p}_{t-1} + \epsilon_t$$

and therefore

$$\hat{W}_t = a[1-(1-\theta)] + b[1-(1-\theta)L]U_t + c_t\theta \hat{p}_{t-1} + (1-\theta)\hat{W}_{t-1} + [1-(1-\theta)L]\epsilon_t$$

where it is apparent how the error term follows a AR(1) process. In the case of the RE scheme the benefit of utilizing a complete macroeconomic model (in comparison to simpler schemes) for the estimation of a wage equation may not be great enough to justify the (additional) cost of its estimation (Ormerod. 1982). As for analytical problems, in addition to the previously mentioned of the restricted character of the information set used, the AE scheme produces a biased prediction when the rate of change of prices exhibits a trend such that inflation will be overestimated (underestimated) whenever is increasing (decreasing). In turn the RE faces the difficulty of the learning by the agent of the true model: unless the agent is assumed to have a priori knowledge of the functioning of the economy there is no guarantee that the learning process would not get stuck at an incorrect model (Pesaran. 1984).

63. We have:

$$c\theta \sum_{s=0}^{\infty} (1-\theta)^{s} \hat{p}_{t-s-1} = c\theta \sum_{s=t}^{\infty} (1-\theta)^{s} \hat{p}_{t-s-1} + c\theta \sum_{s=0}^{t-1} (1-\theta)^{s} \hat{p}_{t-s-1}$$

$$= c\theta(1-\theta)^{t} \sum_{s=t}^{\infty} (1-\theta)^{s-t} p_{t-s-1} + c\theta \sum_{s=0}^{t-1} (1-\theta)^{s} \hat{p}_{t-s-1}$$

$$= c0 \left[\sum_{s=0}^{\infty} (1-\theta)^{s} \hat{p}_{0-s-1} \right](1-\theta)^{t} + c\theta \sum_{s=0}^{t-1} (1-\theta)^{s} \hat{p}_{t-s-1}$$

s=0 0-s-1 s=0 t-s-1

64. The relevance of the assumption of workers' knowledge of the correct model in the Colombian case is clearly questionable.

65. Three elements are usually considered when input requirements rise less rapidly than output as output increases: first, falling unit costs up to full capacity for a given plant capacity; second, falling unit cost with larger size plants operating at full capacity; third, falling unit costs stemming from capital accumulation. Although the second element is usually looked at in a static sense, we subsume it in the dynamic aspect, linking movements to larger plant size to the capital accumulation process. In this direction it is worth refering the evidence of Pratten (1971) for British industry, and to a lesser extent of Bain (1956) for North American industry, suggesting that the minimum efficient scale of plants is substantial.

66. Decreasing costs imply for $u<1$ that $\epsilon=u/u'<1$.
Then $d(u/u')/du > 0$, i.e. $du/u>du'/u'$, which (for given given Q^* and L^*) implies $(dQ/du)/Q > (dL/du)/L$.

67. We have $d(\tau k)/dK>0$ iff $(d\tau/dK)k+(dk/dK)\tau > 0$.
The derivative in the first brackets is positive inf the elasticity of Q^* with respect to K is more than 1; the derivative in the second brackets is positive if the elasticity of L^* with respect to K is less than one. Thus $db^*/dK>0$ expresses a technological transformation increasing the efficiency of labour through a combination of a capital augmenting change and a capital intensification process. Generally speaking these two conditions are not (simultaneously) necessary; the proportional increase in L^* times τ must simply not outweigh the proportional increase in Q^* times k. However, the two conditions are likely to be fulfilled by the technological transformations accompanying the process of capital accumulation.

68. The approach to the analysis of productivity growth concentrating exclusively on the influence of k is limited to the particular conditions of full capacity utilization. On the other hand, its analysis refers either to movements between techniques on the same isoquant within a given technology, or movements towards a technique belonging to a superior technology and, then implying a shift of the isoquant towards the origin. Thus, in the first case the relationship is tautological given that Q/L must increase with Q constant if K/L rises; in the second case simply asserts that the technical progress is not only capital augmenting but also has a labour augmenting component. Therefore, beyond the definitional content about the evolution of k, the implication on the evolution of τ is simply that technical change is not purely "capital augmenting".

69. Berndt & Fuss (1986) show that a substantial part of the decline in productivity growth during the seventies is due to the use of a long-term equilibrium framework instead of a short-run equilibrium (in which variation in the utilization of quasifixed

inputs is allowed for). Hulten (1986) shows how the growth rate of real short-run average cost can be decomposed in one multifactor productivity growth term, and a capacity utilization effect.

70. They are dynamic and aggregate in that they are determined by the history of the capital accumulation process, and by the externalities and intersectoral forward and backward linkages arising within the productive apparatus.

71. See Thirlwall (1983) and Mc Combie (1983) on Kaldor´s Laws; Michl (1985) on Verdoorn´s Law; and Bairam (1987) for literature on Kaldor (1966).

72. See Roemer 1989a, 1989b for surveys on these developments.

73. Furthermore, the lag in I considers (Sylos, Labini. 1984) that I can have a negative impact upon productivity in the period of its implementation as a result of the disturbance in the productive process through the introduction of new machinery.

74. As in the previous section the margin is $my=\mu/(1+\mu)$, so that $dmy/d\mu > 0$, although μ does not refer to the ex-ante price rule but to the ex post margin over variable costs. This is consistent with $\mu/1+\mu = \Pi/Q$, and $\mu = \Pi/VC$.

75. This is consistent with Kalecki´s rather than Godley´s interpretation of the relation between the mark up and these charges.

76. Different results for the evolution of μ' are obtained according the assumption made for the growth of b_a. We assume this is half that of b_1 because this assumption implies the evolution of the price-cost-dynamics margin most similar to that of the production accounting margin. In any case, although both margins follow a similar trend there are differences in some years. In addition to problems with the data there are two sources of divergence between these two indicators: firstly, in the estimation of the price-cost-dynamics margin we use β instead of b; secondly, this indicator excludes general costs considered by the production accounting indicator.

77. L is a measure of labour which does not take due consideration of differences in productivity of different types of labour; to overcome this limitation, we introduce a a measure, L_p, which weights direct and indirect employment by their respective share of wages.

78. Concerning the deflation of these indexes, there are strong grounds for analysing the rate of profit and the margin in current terms: these are the relevant for entrepreneurs and deflating excludes the effect of changes in relative prices. Meanwhile, this exclusion is important in the analysis of the dynamics of productivity when aiming to isolate the effects of changes in factors utilization as a result of substitution and technical change. However, the deflation procedure is beset by problems implied by the choice of deflators, and assumptios on

inflation accountig are required to deflate the capital stock and value added. Although the latter in real terms should be obtained as a residual of production and material costs deflated by their respective indexes, the poor quality of the deflators for this costs required that we use two alternative sets of indicators: one deflating value added by the same index as production (which in the case of the margin is aproximately the same as performing the analysis in current terms); and the other assumes that value added in real terms grows at the same rate as production in real terms.

79. The profit rate followed a long run decreasing trend through five stages: first, a rising phase up to 1963; second, from 1964 to 1967 it fell to the level of the fifties with severe drops in 1964 and 1966; third, from 1967 to 1971 it recovered to achieve its highest level in the course of a rising phase which concentrated in 1968-69; fourth, it oscilated from 1971 to 1974 falling in 1973 and rising in 1974; fifth, since 1975 it dropped in the course of a decreasing phase up to 1983 including a severe drop up to 1978 and a brief recovery in 1979.

80. Two stages are observed in the development of the margin: the first one ending in 1974, contains the same three initial phases as the rate of profit; the descending second phase after 1975 includes fall up to 1978 which deepened substantially after the peak of 1979. As for the evolution of the various indicators obtained using different deflation methods and with the price-cost-dynamics margin, although they show the same general behaviour, the following differences are observed: in 1975 and 1980 the various production accounting indexes fell, while the price-cost-dynamics index rose; in 1977 the production accounting index deflated assuming real value added grew at the same rate as real production increased, while the price-cost-dynamics and the other production accounting indexes decreased; and in 1981 the production accounting index deflated assuming real value added grew at the same rate as real production rose while the price-cost-dynamics index fell.

81. Considering the index consistent with the rate of profits and the margin (i.e. in current terms), we can observe three phases in the evolution of productivity. Between two rising phases, the first up to 1971 and the second from 1976 onwards, a descending phase implied that productivity only recovered its 1971 level as late as 1977. If we consider the index with real VA growing like real output the increasing phase starts in 1977 and the 1971 level is recovered in 1979. If we consider the index with real VA obtained as residual the increasing phase starts in 1976 and the 1971 level is recovered in 1978. As for the differeces with the alternative measures obtained with L_w (instead of L) and b (i.e. with Q instead of VA), although the general evolution is quite similar, the following differences are observed: both productivity obtained with L_w (instead of L) and b (i.e. with Q instead of VA) fell in 1969 and increased in 1970 after a far higher increase in 1968; b fell in 1963 and 1966 and increased in 1966 and 1980.

82. Four phases are observed in the evolution of utilization: rising until 1962; descending between 1962-66; rising between 1967-73; and descending after 1974, the deepening after the 1979 peak.

83. Focusing on annual behaviour in the critical period 1972-78: the 1972 profit rate fall is explained by the decline in productivity and the profit margin, while the 1975 profit rate fall is explained by decreases in all three elements including utilization; the 1978 fall is explained by the margin decrease, while that of 1982 is explained by the margin and utilization declines. The increase in the margin in 1974 determined a characteristically Kaleckian process from 1973 to 1975 in which the rate of profit fell far more than the margin as a result of the decline in both productivity and capacity utilization.

84. By showing that, as a stylized fact, the level of output in Colombian manufacturing has been demand rather than supply constrained, we now provide an empirical justification for the fixed-price elastic-supply framework which underlies our analysis.

85. Substantial capacity subutilization prevailed from 1958 to 1961, from 1963 to 1970, from 1975 to 1977 and from 1980 to 1982, and full utilization occured in 1962, 1973, and 1979. Meanwhile from the analysis of the foreign exchange and credit restrictions in section 2.2. it follows, that the first one binds only in the 1963-67 period, and the second in 1958-61, 1972 and 1981-82. Additionally, consideration of GDP growth suggests effective demand problems in 1958,1960,1963,1965 to 1967, 1975 to 1977 and 1980 to 1982. Therefore, the prevalence of capacity subutilization in these years can be explained as follows: from 1958 to 1961 due to credit and demand restrictions, from 1963 to 1967 due to the demand and foreign exchange restrictions, from 1975 to 1977 due to demand restrictions; from 1980 to 1982 also due to demand restriction, the credit restriction contributing in 1981 and 1982. Of course, the convergence of demand and supply constraints is not surprising since foreign exchange solvency reflects external incomes, and the foreign exchange restriction motivates contractionary aggregate demand policies.

86. The only exception to the limitation of the credit restriction also to the preceding period was 1972. Nevertheless the fact that the industrial sector grew at the same rate as GNP (7.8%) suggests that this restriction was no more constraining demand.

87. The role of demand has been emphasized by studies on the determinants of capacity utilization (e.g. Currie. 19), and factors limiting the level of output (e.g. Sarmiento. 19 refering results of the Fedesarrollo Entrepreneurs Survey). Similarly, a disequilibrium model estimated by Bourgiunon and Leibovich concludes that the economy as a whole operated with excess supply in 1958-60, 1962-65, 1967, 1975-77, and 1979-80.

88. With regard to material costs we observe the following: 1) The increase in the share of material costs from 1972 was due to successive rises of raw materials in 1973 to 1975, industrial costs in 1977 to 1979, and energy from 1978 onwards. 2) The modest magnitude of that increase is explained by the fact that the biggest of these rises, i.e. that of raw materials, was reversed by 1979, while the impact of industrial costs and energy is moderated by their low weight in the cost structure. As for the items of value added (abstracting now from the increases in indirect taxes and interest) the following is observed: 1) The contribution of general costs to the fall in the share of profits in net value added was more important than that of labour earnings in that they show a more important and consistent increasing trend. 2) Wage pressure concentrated in 1978 and 1982 and was preceded by a substantial deterioration in the share of labour earnings up to 1975. Thus, due to its strong fluctuations (falling in 1974 and jumping in 1978) an increasing trend in the share of labour earnings becomes apparent only from 1976 onwards.

89. We consider the evolution of the price indexes included in the price equation from two complementary approaches. The first focuses on the yearly dynamism of prices versus costs by considering differences in their inflation rates. This difference (see Table 4.3-4-A) shows deteriorations in price reactions to cost increases: in 1973 vis-a-vis imported inputs; in 1976 vis-a-vis energy and domestic raw materials; in 1977 vis-a-vis raw materials and in 1978 vis-a-vis wages; and in 1981 and 1982 vis-a-vis energy and wages. The second approach stresses the accumulated effect by considering the ratio of their indexes. This ratio (see table 4.3.-4-B) shows that the increase in prices was slightly less than that of costs during the period, although the only cost with accumulated inflation substantially higher that that of prices is energy.

90. The sum of the coefficients that measure the elasticity of prices fell below one from the sixties to the seventies (Chica. 1983 b). This suggests that the price reaction to cost movements suffered a greater inertia in the seventies, and could no longer be explained exclusively by these movements. Reyes (1984) attributes the decrease to imports imports liberalization. Fedesarollo's (1985) quarterly analysis confirms the instability of 1973-79. but finds that elasticities add up to one in the seventies.

91. The growth of the share of wages in value added is quite moderate in the long run (0.7% per annun from 1958 according to Guterman. 1984).

92. Rates of growth of real product wage and productivity show: 1) Both wage and productivity continuously grew until the beginning of the seventies, the latter growing at a faster rate. 2) While wage began to stagnate in 1971-72. decreased until 1974 and reached in 1978 a level higher than that in 1971, productivity began to stagnate in 1971, decreased until 1975 and reached in 1977 a level higher than that in 1971. 3) Although

wages grew faster than productivity from 1970 to 1982, the latter reached a higher rate of growth extending the period up to 1985. 4) Therefore, although wage dynamics exert pressure on the margin in the 1979-82 period, productivity growth allowed the subsequent recovery of the margin in spite of continued wage pressure.

93. These concepts assume a determination of nominal salaries in institutional terms according to which workers bargain to obtain their real target wage, i.e. considering inflationary expectations. Two elements influence the result of this push: on the one hand, workers' power to obtain in the bargaining process a nominal wage which, given these expectations, guarantees that the target real wage is achieved; on the other hand, the degree of accuracy of their expectations in forecasting the inflationary process. A measure of that power, and therefore of the effect of both political and economic factors involved is the wage resistance coefficient, which is a measure of workers' reaction to anticipated inflation (ex-ante in character like the markup targeted by firms). Meanwhile, the achievement coefficient differs from both this ex-ante concept and the product real wage (the ex-post concept analogous to the profit margin for the workers) in that it involves both bargaining weakness and prediction errors in accounting for the divergence between the real wage and workers' target.

94. To provide a background for our analysis of the seventies, we stress that the wage resistance coefficient peaked in 1968 (after significant increases in 1963 and after 1966), and the institutional conditions of wage bargaining subsequently deteriorated. This weakened bargaining position combined with inflation underestimation to erode this coefficient from 1974 to 1977. Conversely, both the adjustment of inflationary expectations to the seventies levels and the effect of social unrest on wage policy accounted for the recovery of the wage coefficients from 1978 onwards.

95. This suggests a rigidity in the adjustment of expectations requiring four years to be completed, i.e. this supports the adoption of the simple expectational scheme (averaging the last four years) included in the wage equation.

96. A similar mechanism explains the decrease in the real wage in 1979.

97. This combination coincided with the long term decreasing trend in investment, in accordance with the long-term link between the margin and demand via investment plans and the firm's internal generation of funds.

98. Causality may have run from an increase in the mark up to a deterioration of demand in 1973-75, and from a reduction in the former in 1976-78 to a recovery of the latter in 1978. Kaleckian mechanisms, with the margin moving inversely to demand may have compounded the effects of the export crisis in 1974-75 and the coffee boom in 1978 contributed to this process, via the effect on demand of a deterioration and subsequent recovery of the

purchasing power of workers. In particular, in 1973-75 an increase in the margin greater than that in the rate of profit combined with the 1974 fall utilization. Conversely, from a longer perspective, the 1972-77 fall of the rate of profit far exceeded that in the margin with capacity utilization decreasing considerably.

99. Although this decreasing tendency appears moderate considering the entire after 1958, it was substantial after 1972. Looking at downward deviations of the margin from this trend during this period in relation to demand conditions (given by capacity utilization) and cost pressures

illustrates

how the combination of these pressures with the deterioration of demand conditions causes decreases in the margin. Although they must have been compounded by demand (or other supply factors such us wage settling arrengements) cost pressures appear to have been crucial in 1976-78, given pressures from the cost of energy and domestic raw materials in 1976, from the latter in 1977, and from labour costs and energy in 1978. Conversely, the contribution of demand deterioration appears particularly clear in 1980, and that of both cost pressures and demand deterioration in 1981-82.

100. Perhaps explained by a projection of the recent experience of high demand and cost pressures.

101. The rigidity of expectations based on projections of past experience vis-a-vis current events played a crucial role in the movements of the margin. On the workers' side sluggishness in their inflationary expectations gave firms room to protect the margin in the face of input cost increases up to 1975. On the firms' side, the experience of the 1974-75 demand fall and stagnation in spite of the boom in 1977 may have contributed to their inability to take advantage of the 1978 demand expansion.

102. In terms of the elements m and y, the fall in the share of profits in income compounded the previous decline in the share of income in output.

103. Although the nominal rate of interest increased substantially in 1972 and 1975, industrial price inflation postponed the increase of the real rate until 1978 when this inflation abated. Similarly the increase in the rate of interest up to 1981, resulting from the interest rate liberalization, triggered an abrupt increase in the real rate of interest, particularly in 1982 when price inflation abated again. The effect of these processes on the net profit margin (and the profit rate) was compounded by the expansion of firms' debt.

104. The redistributive mechanism arising from the reaction of wages to agricultural prices has been repeteadly illustrated in neostructuralist models for the colombian economy. For example, in Lora & Ocampo's (1986) simulation model, the indexation of wages to agricultural prices brings about a transfer of resources

from urban capitalists to rural rentiers, in conditions of demand restrictions for the adjustment of industrial prices to rising wages.

105. Although estimations in logs show higher elasticities, we exclude them because the series are I(1). The spurious regression problem does not affect the estimation in rates of growth because these are stationary series.

106. Here arises the same problem we noted for the income variables in the demand functions, i.e. labour costs are strongly correlated with the lagged dependent variable, so they show a more important influence than imported inputs only when lagged prices are excluded and autocorrelation correction methods are used.

107. A negative sign of utilization (obtained in the estimation in logs) can be interpreted as expressing the short run increasing returns effect which prevails at substantial excess capacity.

108. The interpretation of the considerable elasticity to export prices as expressing a strong influence of international prices is called into question by the fact that the index used is the retail index for manufactured exports, which is clearly affected by supply conditions.

109. In the estimation in logs a change towards the expected negative sign of productivity takes place.

110. A more detailed examination of the results of the quarterly estimations shows: 1) For current costs, the only with consistent influence is domestic inputs, with imported inputs and energy being statistically significant only when M1 and utilization, respectively, are introduced (regressions 2 and 3). 2) When lagged two quarters wages have a stronger influence (regression 4) than without any lag (although neither is statistically significant), and they do not show the expected positive sign when lagged otherwise. 3) The only lagged cost which has a statistically significant influence is imported inputs, which also has its highest weight when lagged two quarters (regressions 4 and 8); a significant negative coefficient for this cost lagged four quarters (regressions 4 an 8) is also observed. 4) Neither productivity nor demand variables (capacity utilization, the deviation of GNP from its trend and M1) are statistically significant, although the negative sign for capacity utilization can be interpreted as expressing a short run increasing returns effect (regressions 1 to 3).

111. The indicators of the labour market disequilibrium have a weaker influence compared to both expectations and wage resistance variables.

112. A first test to choose the inflationary expectations to be introduced in the wage equation included the following schemes: the two versions of the AE with the parameter θ going from 0.2 to 0.8; and two types of simplistic schemes (which we call SE) averaging from 2 to 5 of the previous rates of inflation with either equal or backwards decreasing weights. Series with the closer correlation with growth of both wages and prices were chosen. On the other hand, in the quarterly case, the ARIMA approximation to a RE scheme was introduced directly into the wage equation. The fact that this pre-selection process entailed the use of the AE with weighing coefficients of 0.2 and 0.4, and SE including up to 5 lags, points to an inelasticity in expectational adjustment to changes in the pace of inflation. The hypothesis of expectational regidity is also upheld by the regresssion results. The AEC2 (AE corrected for autocorrelation with a coefficient of 0.2) performs better (regressions 5 to 10) than both AEC4 (AEC with 0.4) and the two SE's included (SE5D and SE5S standing for 5 lags with decreasing and equal weights, respectively). The fact that the decreasing weights scheme does not perform better than the simple scheme points in the same direction.

113. A negative relationship is implied by defining the wage gap as the ratio of the actual real wage to the desired one. Both this index and productivity have a statistically significant influence with the expected sign, the former remarkably strong. However, this influence and, to a lesser extent, that of productivity and inflationary expectations are weakened by the introduction of the lagged dependent variable.

114. The influence of inflationary expectations is weaker than in the annual case. It approaches significance only for SE including 3 years (regressions 1 and 3), while the ARIMA approach to RE performs worse than the other selected series (regression 23 to 26). The preselection process gives opposite results to the annual case, pointing to the inclusion of ME including 2 and 3 lags (instead of 5) and AE with 0 coefficients of 0.8 and 0.6 (instead of 0.2).

115. This may also reflect problems of quality of information and dynamic specification.

116. This is clear in the annual case. In the quarterly case, neither wages in the price equation nor price expectations in the wage equation are significant. As for the problem of lags, comparing the two quarterly estimations, while the highest coefficient for wages in the price equation is obtained when lagged two quarters, the highest coefficient for price expectations is the simple average of three periods. Combined with the fact that the expectations variables are built with past observations, this suggests that wages lag behind prices longer than prices behind wages, consistent with the institutional arrangement of price setting and wages settling in the Colombian economy.

117. The former process foregoes complementarities arising from the development of a KG sector; the latter foregoes learning by doing and human capital complementarities stemming from the incorporation of new techniques.

118. Two problems affect these results. First, as with the investment function, the relation loses its stability when the observations for the eighties are included. Secondly, the results could be weaken by dynamic specification problems also sugested by the fact that we did not manage to apply the 2SEG method due to problems in the estimation of the cointegrating vector.

119. In general, previosus studies on this problem have focused exclusively on the influece of k. According to Sandoval (1982) k and Q show a significant influence on b; Chica (1983) finds a positive intersectoral correlation which suggests that sectors with more intensive capital processes are more productive; Sarmiento (1984) refers to a similar result, adding that these sectors use more a qualified labour force (complementarity which we include in our dynamic scale economies); Guterman (1984) emphasizes the importance of factor substitution in the influence of k upon productivity growth.

120. Productivity was adjusted to exclude indirect taxes from value added in the numerator of β.

121. Although K_{-1} is the only variable which maintains its influence when the period is extended up to 1985, problems of instability in the relationship and dynamic specification affect this estimation: the coefficients of the other variables fall and the autocorrelation problems remain severe in spite of various correction methods.

122. Graphic 4.4-1 illustrates the correlation between rates of growth of u and the residual of value added not attributed to growth in factors use (which reaches a R^2=0.65). This shows the importance of static increasing returns overlooked by the analysis of productivity growth until recently. Additionally it indicates the inappropriateness of labeling this residual technical progress as is common in the traditional metholology (e.g. Echavarria 1990 for colombian manufacturing).

123. Until the 1980s Colombian manufacturing virtually postponed the introduction of the automatizing electro mechanic and micro electronic techniques, which contrast with the basic industrial process adapted in the sixties.

124. This is related to the relative dynamization of investment in the early eighties and in the importation of capital goods considered in section 3.4.2. (see Cubillos 1985). In some sectors systems of process control were improved, and in others automatization was increased. As for the determinants of this incorporation, competitive pressures and the availability of new technologies (e.g. injecting machines in the plastic industry) operated on the supply side. On the demand side we have import substitution, new quality requirements (e.g. imposed by the

printing industry to the paper sector) and demand expansions (e.g. parts for electric appliances). The competitive pressure factor reflects Steindl's argument on the ability of technological progress as an "exogenous" factor to bring investment activity out of the vicious circle "deterioration of demand and profitability conditions-deterioration of investment dynamic". In such situations, when the deterioration of demand and profitability conditions can to some extent be attributed to competitiveness erosion, investment incorporating new technologies works as a last resort subsistence device, occuring not only despite but also as a reaction to that deterioration. The textiles and graphic arts sectors exemplify efforts to recover or expand markets through the incorporation of new technologies.

125. Except some cases of generalized changes in plants and global processes: traditional processes were removed in the cement and plastics (i.e. injection) sectors; new control systems for continuous processes for larger production volumes were indtroduced in the paper sector. In most cases a restricted substitution took place within old processes, e.g. micro electronic innovations are introduced in one particular stage of the productive line.

126. Steindl's opposition between the concentration process, when innovations take place as part of the oligopolistic effort to exclude the most inefficient firms, and the stage when the concentration process has been completed and competitive pressures for innovating disapear, applies to the contrast between the sugar industry (where recent technical changes introduced by the big sugar mills have increased the gap between small and large firms) and the higly monopolistic tobacco sector. The asociation of innovative processes with competitive instead of monopolistic conditions is also exemplified by the incorporation of new technologies by medium and small enterprises of the graphic arts, metalmechanic and textile sectors as distinct from big enterprises in these sectors.

127. The contrast between the rigidity of the vertically integrated big firms of the textile sector and the flexible specialization of the small firms of the graphic arts sector is a case in point. In the latter case, the incorporation of new technologies has been linked to specialization by plants in specific parts of the production process.

128. Scale is an obstacle for the introduction of technical changes when these require both continuity of high production volumes, e.g. foods, beverages, wood, glass, some metallic products, and some processes of the metalmechanic and transport equipment industries (such as the assembling and painting process in the latter). Meanwhile, demand reaches the level of minimum scale only on rare ocassions linked to specific investment projects in the case of agricultural machinery, steel structures, and equipment for the petroleum sector.

129. As seen in the Figure if demand is such that firms operate in either the range of increasing or decreasing returns, the conflict worsens with Ω increasing as a result of falls in b and/or rises in μ.

130. I am grateful to P Gonzalez, B Rowthorn, and H Samiei for comments on this matter.

131. m falls in the shock period because price reation is lagged until next period, when m starts recovering. Two sets of parameters were used for the simulations. The set used in the figures, i.e.

w_o=6, $p\underline{Q}$=10, ar_o=4.33, ar_t=5, α=0.6, μ=0.2, l=0.66

gives: m^*=0.30, n^*=0.70, y^*=0.56. The alternative set, i.e.

w_o=6, $p\underline{Q}$=5.91 , ar_o=3.64, ar_t=4, α=0.96, μ=0.25, l=0.17

gives: m^*=0.55, n^*=0.45, y^*=0.38.

132. This is equivalent to $p'\alpha\delta - w' < \alpha\delta ar\Gamma - w'\Gamma/m$, with $w'=[m'\delta ar+(1-\delta)p_a^*]$ $p'=[m'l\alpha(1-\delta)p_a^*+mar^*]$ $\Gamma=(1- m'l \alpha \delta)$ Condition which is fulfilled for the parameters used in point 1.

133. This is so for the one for all changes in r method of analysis used.

CONCLUSION

We tackled the task of explaining the stagnation of Colombian manufacturing in terms of the deterioration of the conditions of industrial accumulation. We showed the mechanisms stressed by our post-Keynesian Structuralist framework at work in the deterioration of financial, demand and profitability conditions. The results of the estimation of the flexible accelerator and profits-finance model of investment support the influence of demand (via capacity utilization) and profitability (via the rate of profits) upon investment activity. Similarly, these results suggest that excess demand for credit and foreign exchange impair this activity.

Deterioration of financial conditions was shown to result from the combination of financial reform, the stabilization policy which followed Colombia's coffee export boom, and the consequent financial distortions. The "reform with stabilization" phase up to 1978 affected credit liquidity for manufacturing both from the view point of cost of credit and of the availability of long-term finance for fixed investment. This was followed by the "liberalization and collapse" phase bringing about the explosion of the interest rate, and the erosion of firms' financial positions culminating with the 1982 crisis. The deterioration of credit liquidity coincided with a transformation of firms' financial structure towards a reduction of equity in relation to loan capital. This discrepancy between credit availability for manufacturing and the modification of the firms' method of finance was accompanied by the transformation of their assets structure substituting current for long term assets. Thus, the combination of all these processes revealed to what extent financial developments in the seventies contributed to the erosion of conditions of investment activity in manufacturing.

The deterioration of conditions of demand is explained by the

inability of domestic demand to compensate for the reversal of the import substitution process, and the decline of manufactured exports. Stagnation of domestic demand was linked to: 1) changes in the distribution of income favouring social groups with lower propensities to consume manufactures; 2) the limits imposed by contractionary policies on the demand effect of the income expansion associated with the coffee exports boom; and 3) the implications of the increase in the price of food. On the foreign trade front, although the evidence of a generalized competitive effect of the import expansion is not conclusive, both econometric analysis and specific sectoral evidence point to the plausibility of such an effect in some sectors. As for the factors contributing to this expansion, income expansion and liberalization of imports appear to have a more decisive influence than the movement in relative prices, the liberalization becoming particularly important in the early eighties. With regard to the export deterioration, its impact was especially damaging in some sectors, with textiles standing out, as in the case of import expansion. Slowdowns in international trade appear to have been the crucial factor in export deterioration, complemented by erosion of the real exchange rate. Although the evidence on the contribution of the subsidies element of the effective exchange rate is not conclusive, it seems that the devaluation lag built up since the middle seventies weakened the competitive stance of Colombian manufactures in the stagnant foreign markets of the early eighties.

The deterioration of profitability is shown to result from a squeeze of firms' pricing mark-ups and stagnation of productivity growth[1]. From the middle seventies the deterioration of demand was compounded by the recovery of wage resistance and the adjustment of workers' inflationary expectations to prevent firms from continuing to protect their profit margins in the face of increasing cost inflation. The demand slowdown which followed the 1978-79 expansion complemented the new wage-settling conditions and the liberalization of imports to deepen the gross margin

erosion in the early eighties. Consequently, the impaired capacity of firms to pass on cost pressures combined with an explosion in financial costs to generate the collapse of the net profit margin which took place during this period. As for the stagnation of productivity growth, it is explained by the fall in capacity utilization and investment activity. The contribution of weakening dynamic scale economies did not receive similar econometric support.

In this way, the crisis of industrial accumulation is explained by a combination of *conjunctural* and *structural* factors related to the evolution of the Colombian economy, and to economic policy implemented during the period. Some of these factors operated through demand mechanisms and some of them through supply mechanisms. A succession of *conjunctural* elements compounded *structural* factors on the demand side. The conjunctural elements included: the deterioration of the real consumption wage resulting from wages lagging behind industrial prices in 1973-75 and food prices in 1977; the poor export performance of 1974-75 and 1981-82 linked to the external crises of those years; various elements of the Dutch disease syndrome such as the shift of workers' purchasing power towards food in 1977; and the liberalization of imports since 1978. The underlying structural demand factors included the exhaustion of the IS strategy, and the narrowness of the internal market arising from the highly unequal income distribution and the stagnation of agricultural supply.

On the supply side the *conjunctural* factors included cost inflationary pressures, particularly in 1976-78, and the financial crisis at the beginning of the eighties. The *structural* factors included the stagnation of productivity and the consequent erosion of competitiveness, as well as the lack of financial resources implied by the financial adjustments of the seventies.

Two conclusions emerge from the analysis above. The first

concerns the crucial role of the interaction of demand-supply and endogenous-exogenous factors in the deterioration of conditions of industrial accumulation. The basic fact which stands out is a succession of *conjunctural* exogenous demand factors at work in the context of a *structural* deterioration of productivity growth due to endogenous supply factors. Further, two interrelated processes indicate the complementary role of the two type of factors. On the one hand, the deterioration of productivity growth is traced back to a lack of innovative investment related to the stagnation of demand. On the other hand, the competitive weakness of the sector reveals the inability of entrepreneurs to adjust to the new requirements posed by the neoliberal policy, and by the new macroeconomic and external situations.

The second conclusion relates to the role of a particularly important exogenous factor, economic policy. We have considered a succession of short-term policies including: a policy of adjustment to the coffee boom which greatly limited the benefits of the consequent expansion for the sector; and a policy of public deficit finance and compensation for its inflationary impact which affected the demand and financial conditions of manufacturing. These operated against the background of long-term policies, such as financial and commercial liberalization, reversing the previous industrialist emphasis of economic policy. More precisely, as was stressed when considering the context of the industrial crisis, the neoliberal-monetarist disregard for long-term development problems fit the need to handle the new conjunctural problems.

Finally, the discussion of the interaction of the policy and entrepreneurial activity considered points to the inappropriateness of focusing on one of these factors in isolation from the other. The interaction of policy failure and poor entrepreneurship accounts for the sector's inability to adjust to the new conjuncture in the Post-ISI context. However, the emphasis of this study on the role of exogenous factors stresses the crucial role of economic policy, thereby

counterbalancing the current neoliberal one-sided consideration of the entrepreneurial factor. The need for policies aimed at maintening a favourable macroeconomic environment stands beside the need for specific sectoral policies to support the manufacturing sector in the restructuring process of the subsequent period. Indeed, it is difficult to see how this processes can be successfully completed without a reconstitution of the conditions of investment activity supported actively by government policy. In particular, the absence of government initiatives in the technological, financial and export marketing areas would leave the sector in a weak position to achieve the competitiveness requirements of the new export oriented strategy.

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