

Report No. 8165-ME

Mexico

Industrial Policy and Regulation

August 15, 1990

Country Operations Division I

Department II

Latin America and the Caribbean

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CURRENCY EQUIVALENTS

Currency Unit - Mexican Peso (MexP)

On November 28, 1989 the exchange rate in the controlled market was US\$1 - MexP2517.00; the free market exchange rate stood at US\$1 - MexP2637.00.

LIST OF ABBREVIATIONS

AZUCAR, S.A	National Sugar Company
BANCOMEXT	Banco Nacional de Comercio Exterior (National Bank for Foreign Trade)
CEPROFI	Certificado de Promocion Fiscal (Fiscal Promotion Certificate)
CETE	Certificado de Tesoreria (Treasury bill)
CIT	Corporate income tax
CFE	Consejo Federal de Electricidad
CONASUPO	Compania Nacional de Subsistencia Popular (National Company for Popular Subsistence)
CR4	4 Firm Concentration Ratio
DCRs	Domestic Content Requirements
DDF	Departamento Distrito Federal (Federal District)
DFI	Direct Foreign Investment
DCNCC	Direccion General de Normatividad y Control de las Comunicaciones (Director General of Norms and Control of Telecommunications)
DGT	Director General de Telecomunicaciones (Director General of Telecommunications)
DINA	Diesel Nacional
E. A	Economic Commission of Latin America
ERR	Effective rate of protection
ESP	Economic Solidarity Pact
FEDEIN	Industrial Park Trust Fund
FERTIMEX	Fertilizantes Mexicanos (Mexican Fertilizer Company)
FOB	Free on board
FOGAIN	Small- and Medium-Scale Industry Development Fund (Fondo de Garantia de Industria Mediana y Pequeña)
FLL	Federal Labor Law
FOMEX	Fondo de Fomento de las Exportaciones Mexicanas (Fund for the Development of Exports)
FONEI	Fondo de Equipamiento Industrial (Fund for Industrial Equipment)
FONEP	Fondo de Evaluacion de Proyectos (Fund for Project Evaluation)
FMS	Fondo de Minerales No Metalicos (Fund for Nonmetallic Minerals)
GDP	Gross Domestic Product
GIRA	General Interest Rate Agreement
ILET	Instituto Latino Americano de Estudios Transnacionales
IMSS	Instituto Mexicano de Seguridad Social (Mexican Institute for Social Security)
INEGI	Instituto Nacional de Estadistica Industrial y Geografia (National Institute of Industrial and Geographic Statistics)
INMECAFE	Instituto Mexicano de Cafe (Mexican Coffee Institute)
INFONAVIT	Instituto Nacional Para la Vivienda de los Trabajadores (Housing Fund for Workers)
ISPL	Industrial Sector Policy Loan
ITAM	Instituto Tecnologico Autonomo de Mexico (Autonomous Technological Institute of Mexico)
LIFO	Last in first out (inventory accounting system)
METR	Marginal effective tax rates
NAFIN	Nacional Financiera
NTBs	Nontariff Barriers
PECE	Economic Stabilization and Growth Pact
PEMEX	Petroleos Mexicanos (National Petroleum Company)
PERL	Public Enterprise Reform Loan
PIT	Personal income tax
PRONAFIDE	Plan Nacional de Financiamiento de Desarrollo (National Plan for Financing Development)
PRONAFICE	Programa Nacional de Fomento Industrial y Comercio Exterior (National Program for Industrial Development and Trade)
PRONASOL	Programa Nacional Solidaridad (National Program to Combat Poverty)
FVD	Present Value of Depreciation
QR	Quantitative restriction
SARH	Secretaria de Agricultura y Recursos Hidraulicos (Ministry of Agriculture and Hydraulic Resources)
SCDT	Subsecretaria de Comunicaciones y Desarrollo Tecnologico (Ministry of Communications and Technological Development)
SCT	Secretaria de Comunicaciones y Transportes (Ministry of Communications and Transportation)
SECOFI	Secretaria de Comercio y Fomento Industrial (Ministry of Trade and Industrial Development)
SEMIP	Secretaria de Energia, Mineras e Industria Parastatal (Ministry of Energy, Minerals and Parastatal Industry)
SENEAM	Servicios a la Navegacion en el Espacio Aereo Mexicano (Service to the Navigation of Mexican Aerospace)
SERTEL	Servicios de Telereservaciones (Telereservation Service)
SEDUE	Secretaria de Desarrollo Urbano y Ecologia (Ministry of Urban Development and Environment)
SHCP	Secretaria de Hacienda y Credito Publico (Ministry of Finance and Public Credit)
SIDERMEX	Siderurgia Mexicana (Mexican Steel Company)
SPP	Secretaria de Planeacion y Presupuesto (Ministry of Planning and Budgeting)
SRE	Secretaria de Relaciones Exteriores (Ministry of External Relations)
SS	Secretaria de Salud (Ministry of Health)
TELMEX	Telefonos de Mexico, S.A.C.V. (National Telephone Company)
VAT	Value-added Tax
VCM	Vinyl Chloride
WFS	Workers' Payment System

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MEXICO:
INDUSTRIAL POLICY AND REGULATION
EXECUTIVE SUMMARY

1. Mexico is currently undergoing a rapid structural transformation. Since 1983, the Government introduced macroeconomic stabilization measures, with impressive results, progressed substantially in trade liberalization, and has been undertaking major efforts in domestic deregulation. Deregulation is aimed at reducing distortions that constrain the functioning of markets and, therefore, improve the potential gains from trade liberalization.

2. This report examines selected regulatory policies and its impact on industrial performance. Completed in mid-1989, the report assisted the Government in formulating a program for industrial regulatory reform and served as a basis for policy dialogue between the World Bank and the Government.¹ The Government has since removed some of the regulations covered in this report and made others more flexible. This report is updated to reflect the changes made until early 1990. The rapid progress toward deregulation can serve as an interesting example for other countries embarking on and undergoing a process of rapid structural change.

3. This report is organized as follows. Chapter I provides a brief description of the macroeconomic policies of the past few years and lays out the organization of the report. Chapter II discusses industrial policies, focusing on the incentives and regulations affecting the manufacturing goods market. Chapters III to V discuss the regulatory policies affecting factor markets -- industrial credit, taxation and labor -- and how they have affected industrial incentives and firms' capacity to adjust. Chapters VI and VII deal with the regulation of transportation and telecommunications, which provide important services to the industrial sector. Chapter VIII presents a preliminary analysis of how Mexico's market structure has evolved over time and how it may have been influenced by the regulatory system.

4. Over the past two decades, economic and administrative regulations as well as direct government participation have been pervasive in key sectors of the Mexican economy, favoring the development of a select group of industries and redistributing income to certain groups. While achieving some of their objectives, the regulations have also had negative consequences, such as diminishing competitive pressure, reducing flexibility and discouraging efficient change among producers. These occurred most frequently through a

¹ This report was an important input into the preparation of the Industrial Sector Policy Loan (June, 1989) and the Road Transport and Telecommunications Sector Adjustment Loan (May, 1990).

combination of entry restriction and the discretionary application of the rules.

5. Firm concentration also increased in the early eighties. Many medium sized firms contracted or exited while the number of small establishments rose dramatically. The largest increases in concentration were observed in industries that were highly protected and dominated by parastatals. Future research needs to focus on how trade liberalization may have affected the pattern and levels of firm concentration.

6. Trade liberalization brought concerns about excessive or inconsistent regulations to the forefront. For example, it became apparent that better services in trucking and telecommunications were necessary if firms were to compete effectively in international markets. Other forces also favored regulatory reform. Rapid technological change requires higher factor mobility and easier entry and exit, and has exerted pressure to reduce the administrative regulations on firms. Domestic fiscal retrenchment also favored regulatory reform since it called for a smaller role for the state. So the Government reduced tax credits, increased prices on energy, and reduced many of the subsidies to state enterprises, and is embarking on a major privatization effort of banks and of the manufacturing sector.

7. While trade liberalization and the reduction of various subsidies to industry has moved Mexico away from a selective approach to industrial policy, a few industrial programs still provide high protection and regulation in the automobile, microcomputers, and pharmaceutical industries. The report recommends phasing out the quantitative restrictions on imports of these items, together with the removal of regulations on domestic content, firm operations, entry and, in the case of pharmaceuticals, the reduction of price controls and the formulation of appropriate health standards. Recently, Government has announced a program that would increase gradually import competition in these items over the next five years.

8. Another vestige of the selective import substitution strategy is the presence of industrial parastatals. The Government has been an important producer of steel, fertilizer, and basic petrochemicals since the early seventies. In industries where parastatals dominate, the regulation of entry and price setting contributed to poor performance of parastatals and instability in their output. For example, private secondary petrochemicals producers face uncertain supplies of basic petrochemicals, which only PEMEX, the state owned oil company, produces. Importing basic petrochemicals is expensive because these private companies are regarded as transitory customers in the world market. Tax credits (prior to their elimination), preferential credit and informal business ties between public enterprises also create huge cost advantages for public companies. Reforms should focus on phasing out entry and price controls and the eventual privatization of industrial parastatals, in line with the Government actions and announced plans over the past two years.

9. Turning to regulations affecting factor markets, preferential (and directed) credit schemes complemented the selective industrial policy. Based

on data about the distribution of industrial credit between 1985 and 1987, both commercial and development banks channeled a major part of this financing to a few priority industries and a few firms. In particular, the development banks channeled 48% of their industrial credit to three parastatals and nearly 70% to eight parastatals. The commercial banks distributed their lending to industry more broadly, still parastatals and private firms within the same priority industries have been their major clients. After the elimination of preferential credit in 1989, the firm concentration of lending by both commercial and development banks remained focussed on parastatals, albeit to a lesser extent.

10. The recently-announced reprivatization of commercial banks will strengthen more market-oriented criteria in the allocation of credit. Additional efforts are still needed, however, to streamline the role of development banks, create alternative financing instruments for industrial development (e.g., through capital markets), and strengthen prudential regulation of commercial banks.

11. The government has also made major advances in income taxation and fiscal incentives since December 1986, indexing interest payments, depreciation and inventories, making the system less biased toward debt financing in a high inflation environment. Marginal effective tax rates (METRs) are currently lower for projects financed primarily by equity. The Government also lowered corporate income tax that brings effective tax rates closer to levels in the US and Canada. The tax rates applied to foreign investment have also been brought closer to the levels in the US and Canada. Further improvements could make the Mexican tax system more attractive to foreign investors, such as slightly lowering the effective tax rates on the profits of foreign corporations. Investment incentives, whose major impact was to reduce marginal effective tax rates drastically in a few activities, were practically eliminated. All told, these reforms, while increasing the cost of investments, have made the structure of effective tax rates more neutral across industries.

12. The labor market shows high wage flexibility and some rigid institutions, which have contributed to fairly stable employment. Labor legislation can impose large adjustment costs, especially for firms that need to undergo sizable reallocation of labor. High severance payments and union participation in hiring and firing decisions are features of labor legislation that raise exit costs. When unions dispute the layoff(s), firms have to go through a legal process that is often lengthy to negotiate the severance pay or reinstatement. Firms seek to circumvent these requirements through temporary employment contracts, promoting "collaborative" unions, and delaying severance payments. Moreover, unions are influential mainly in industries where collective agreements cover two-thirds of the firms, such as in garments and some parastatals. Future research should focus on the impact of these agreements on productivity and labor mobility.

13. Reform of labor legislation has been slow. Severance pay requirements and job security legislation need revision to make them less onerous for employers. In particular, union participation in hiring and

firing decisions should be defined more narrowly, and legal procedures for dismissing workers need to be simplified. Greater retraining of displaced workers and workers with outmoded skills is also desirable to ease industrial adjustment. The aforementioned recommendations have been crafted to serve the needs of industrial adjustment but do not take into account social or political objectives which may lie behind certain existing labor institutions and regulations. Future work needs to address the other facets of labor regulation and relations.

14. Regulatory policies in service industries may also affect the competitiveness of the industrial sector. For example, inadequate transport services became a major concern once firms felt the pressure of competition from advancing trade liberalization. Prior to 1989 trucking regulations repressed prices and restricted entry severely, hindering the development of trucking services. Entry restrictions consisted of a system of route concessions and permits to haul specific products, a state-sanctioned container transport monopoly, and mandatory use of cargo centers. Route committees, consisting of existing concession holders, decided on who obtained additional concessions. Fifteen families controlled the main corridors and the transport of major products. The black market that developed for rights of affiliation with an established concessionaire provided evidence of monopoly rents. The regulations reduced competitive pressure, resulting in poor service quality, low productivity, a deteriorating trucking fleet, and evasion through illegal operations.

15. In 1990, the Government implemented rapid deregulation of the trucking industry.² It removed route restrictions, implemented clear and minimal requirements for receiving concessions and permits, allowed private sector entry into container services, abolished mandatory use of cargo centers and eliminated price restrictions. Rapid deregulation was made possible by trade liberalization, which altered cargo transport demand patterns. Since only a few concession holders were able to capture the enhanced profits from the new demand patterns, most turned in favor of deregulation. The preliminary results of the deregulation have been impressive: large numbers of new entrants have registered, service quality has improved significantly, and prices have dropped by about 20% on average. One outstanding issue for policy reform is the development of appropriate safety and environmental standards.

16. Industrial users have also expressed concern over the role inappropriate regulations have played in the deteriorating telecommunications services. Major regulatory issues include expanding role of the private sector in an area traditionally dominated by the Government, introducing market-sensitive pricing, enhancing competition, and developing an appropriate regulatory institution. These have all been addressed in the six-year telecommunications program published in 1989. The Government's position, shared by this report, is to reduce the role of the state through privatization of TELMEX, and, eventually, many of the business operations of

² The deregulation measures for trucking and telecommunications services were announced after completion of a first draft of this report in mid-1989.

the SCT or the Ministry of Transport and Telecommunications. The Government has also reduced some pricing distortions, raising rates for local calls, reducing those for international calls, and lowering installation charges, in line with the proposals in this report. Telephone user taxes were also replaced by a tax on revenues. The tariff and tax reforms, combined with a reduced transfer to the Government from TELMEX's profits should enable the privatized entity to generate resources needed to finance its investment needs. Still not clear is how tariff policy will be managed in the future to ensure efficient resource allocation and by whom.

CHAPTER I

INTRODUCTION

1.01 Mexico is currently undergoing a rapid and profound structural transformation. The Government's goal is to carry out economic adjustment leading to growth and more efficient use of resources. In mid-1985 it began a program of reforms whose immediate objectives were to introduce macroeconomic stability and initiate structural change. It has made substantial progress, but achieving this goal will depend on sustaining that macroeconomic stability and deepening the changes in the incentive regime. The next few years will be a period of rapid change for Mexico, during which the nature of public policies toward key sectors will be undergoing significant transformation.

1.02 In the case of the industrial sector specifically, an important concern at this point is the implementation of a set of policies and policy changes that promote sustainable and efficient growth. As long as growth was rapid, as was the case in Mexico until 1982, many of the rigidities in the goods and factor markets were not perceived as hindrances to adjustment. However, as industry declined and import competition rose, many of these rigidities became binding obstacles. Since 1982, several factors -- especially the fiscal problems and the contraction of the domestic market -- have created a difficult climate for industrial adjustment while simultaneously showing how urgently changes are needed. Policymakers (and enterprises) are particularly concerned with ways to provide the right incentives for firms to adjust and to strengthen their capacity to do so. They recognize that, in addition to macroeconomic policy, microeconomic policies will also be important in adjustment, notably those that directly affect the operations of industry.

1.03 The objective of this study is to analyze the nature of the regulation of industry in Mexico and the potential for change. Besides trade and some policies directly affecting industrial goods, very little is known about the nature of microeconomic policies in other areas also important to the performance of industry. Because the coverage of these policies is so wide, this study focuses only on selected policy areas that affect the operation of not only the goods markets, but also of the factor and service markets. It does not look at industrial policy alone, which would include only measures expressly designed to promote industrial goods held desirable by the Government. This approach would place too much emphasis on only a few measures and disregard others outside the narrow plan for industry that have a large impact. Thus, this report also covers regulation of the labor market and of the transport and telecommunications industries.

1.04 To introduce the major themes and set out the structure of the report, this chapter begins by surveying the broad direction of Mexico's changing policy framework and economic performance in recent years and the challenges that lie ahead, particularly in terms of the implications for industry. It then lays out the organization of the report and the issues addressed in each chapter.

A. The Changing Policy Framework, 1950-88

1.05 After almost 30 years of sustained economic growth since the fifties, Mexico, including the industrial sector, has experienced no real growth since 1982. This stagnation has motivated the series of policy reforms that have emerged since mid-1985, whose objectives include the restoration of growth and increased efficiency in the use of productive resources. The key elements of the changes include macroeconomic stability, a more open trade regime and other structural changes that would increase the role of private sector investment and its efficiency. This strategy contrasts markedly with the public sector-led growth and import-substitution policies, and the series of short-term macroeconomic adjustment policies, that characterized Mexico's policies in the past three decades.

1.06 Public Sector-Led Growth, 1970-82. The period 1970-82 was characterized by rapid economic growth -- GDP rose at an annual average rate of 6% and manufacturing a little above 7%. The reason was the rapidly expanding Government involvement in the economy: between 1970 and 1976, the share of public sector expenditure in GDP rose from 20% to 28%. Parastatal enterprises doubled in number and expanded faster than the economy during the same period. The rise in expenditures was not, however, matched by rising public revenues or private savings. As a result, the inflation tax and external debt became increasingly important sources of finance. Inflation accelerated, the real exchange rates appreciated and external debt rose beyond the rate of GDP beginning in 1974.

1.07 In the mid-seventies, major oil discoveries and the subsequent sharp increase in oil prices provided relief from the fiscal and external problems. Government revenues expanded, as did public sector borrowing. The Government also increased its role rapidly in the economy -- its share of value added rose by about a third, while its share in total investment went from 33.5% over the period 1970-75 to substantially more than 40% in later years. The real exchange rate appreciated by more than 25% between 1976 and 1982. External debt fueled much of the expansion, increasing from \$16 billion to \$86 billion between 1975 and 1982.

1.08 The inflationary policies, an overvalued exchange rate and negative real interest rates exacerbated the weakness of the basic incentive regime. The subsidies given through the incentive system rose, reaching 8.5% of GDP by 1980. Fiscal incentives and input subsidies were commonly used to protect domestic enterprises, especially in industry. By 1981, total gross fixed investment (both public and private) declined and reached its lowest level historically in 1983.

1.09 Attempt at Macroeconomic Adjustment, 1983-85. By 1982, external factors, including rising world interest rates and falling oil prices, and the subsequent cut-off from external capital markets, put an end to the expansionary policies and paved the way for fiscal reform. By late 1982, Mexico had begun a drastic contraction of domestic demand through fiscal and monetary policy. It also tightened import controls.

1.10 There was some initial success: the fiscal deficit was halved, international reserves recovered, and inflation came down. Then, in 1984 and 1985, there was some fiscal expansion and monetary relaxation. Economic growth and manufacturing output dropped (Figure 1.1). The largest decline in manufacturing output occurred in the capital goods industries, whose products were sold mainly to the major parastatals. While exports of manufactures grew at an impressive rate of about 50% between 1982 and 1983, they consisted mostly of residual output that could not be sold domestically (Figure 1.2). Domestic investment, particularly private investment, recovered slightly from the 1983 level until 1985, when it declined again.

B. Toward Structural Reform, 1986-89

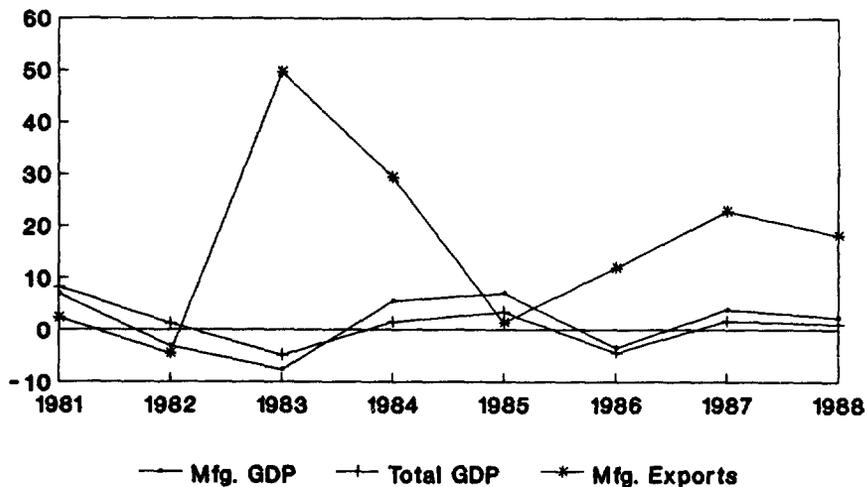
1.11 Since mid-1985, the stabilization efforts have been accompanied by policy changes designed to reduce the structural rigidities. The most important area of change has been trade policy. A key measure was removal of the quantitative restrictions (QRs) on imports from about half of production. The real depreciation of the peso also spurred manufactured exports, whose growth more than compensated for the fall in oil revenues resulting from the oil price decreases (Figure 1.3).

1.12 In December 1987, the Government initiated a stabilization program (Economic Solidarity Pact or ESP) that consisted of a further tightening of the fiscal and monetary policies as well as structural reforms. Trade liberalization was accelerated. By the end of 1988, only 23% of domestic production remained under QRs. Tariffs were reduced, with the highest tariff rate falling from 100% to 20%. Other measures included the privatization of selected state enterprises and the reduction of credit subsidies. Other accompanying measures were the pegging of the exchange rate against the dollar and a freeze on public sector prices.

1.13 The performance under the ESP was exemplary in almost all areas. Between the end of 1987 and early 1989, inflation and the public sector deficit fell dramatically, despite further drops in oil prices, increasingly high real interest rates on debt and the high level of domestic real interest rates, which reached almost 40% by the end of 1988. However, and not surprisingly given the restrictive demand management and lower public investment, real growth did not resume.

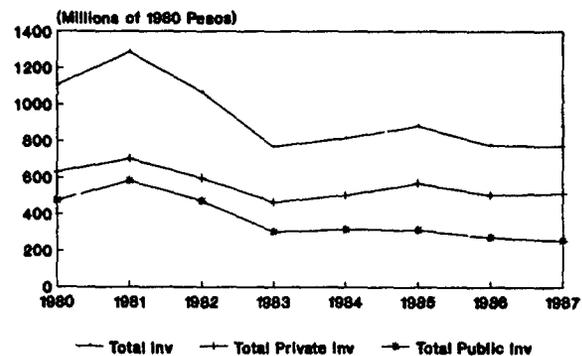
1.14 The changing set of incentives brought about by the trade liberalization was beneficial in some ways, particularly for export and productivity growth. Manufacturing exports became relatively more important, partly compensating for the fall in oil export revenues. Based on some preliminary estimates, total productivity seems to have grown, too. Between 1970 and 1983, it had on average been negative, an indication that much of the growth was based on factor accumulation rather than more efficient factor use (Figure 1.4). Labor productivity growth was positive but capital productivity declined, a further indication that capital accumulation may have fueled the growth. Between 1983 and 1985, total factor productivity growth was positive

**Figure 1.1 Manufacturing GDP and Exports
Average Annual Growth Rate
Mexico 1981-1988**

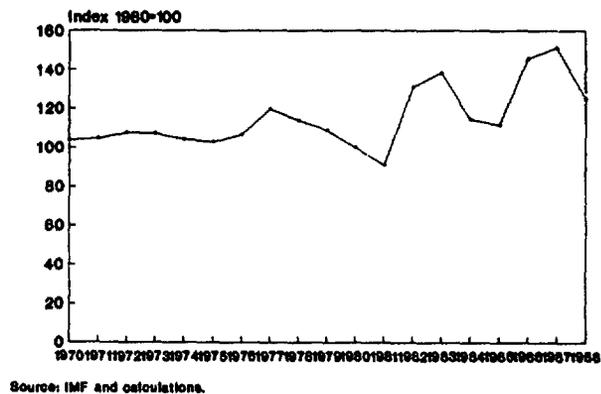


Source: Banco de Mexico, 1980 prices.

**Figure 1.2 Total Gross Fixed Investment
Mexico, 1980-87**



**Figure 1.3 Real Effective Exchange Rate
Mexico 1979-1988**



Source: IMF and calculations.

in many industries, and preliminary evidence for 1986 to 1988 shows positive and improving factor productivity growth.¹ On average, however, it is still low relative to many countries that are industrializing fast.

1.15 On the other hand, the change in the incentive regime did not affect the structure of production. The composition of GDP has shown very little change except for the fall in the share of crude oil. The manufacturing sector shows that chemical and food products have increased their relative shares slightly (see Figure 1.5 and Annex Table A2.1). The share of metal products declined, but some of its industries, particularly automobiles, have grown in importance since 1980.

C. The Challenges Ahead

1.16 The most important objectives for the Mexican Government are the resumption of growth and more efficient use of Mexico's productive resources. It is also clear that the public sector and fiscal efforts under the short-term stabilization efforts can play only a supportive role in achieving higher growth. Private investment will have to take the lead. In 1989, however, private investment was only 11% of GDP, compared with 19.2% in 1980. To stimulate its growth, much will have to be done to achieve a stable macroeconomic environment and to implement an external debt management that is consistent with it. In addition, regulatory reforms will foster factor mobility and competition, which will also encourage an investment response.

1.17 Increased economic efficiency can be attained only if factors are valued at their opportunity costs. The changes in trade policy have been important steps toward that direction. So have been the ongoing internal price and regulatory reforms that match the new outward orientation, in line with the structural reforms during the past few years that have been geared toward reducing the role of the public sector in the economy. In some areas, the changes in the incentive regime complement macroeconomic concerns. For example, the reduction of state involvement in production and subsidies is clearly compatible with the fiscal retrenchment.

1.18 The change in the domestic regulatory framework involves deregulation of policies affecting practically every sector of the economy -- agriculture, the markets for industrial products, services and utilities. The process is complex -- reducing and rationalizing the Government's role as regulator and producer, easing many of the mechanisms (pricing and incentives) that have been used to guide resource flows, and streamlining bureaucratic rules and procedures that had become pervasive in an expanding government.

1.19 Interest groups that have benefited from the regulations have opposed many of these changes. Nevertheless, the forces encouraging deregulation have grown stronger in the past few years. In addition to domestic fiscal constraints, external forces, including technological changes

¹ Data on total factor productivity measures were available only until 1985 because capital stock data were available only until then. Preliminary measures based on estimated capital stock and partial factor productivity measures were calculated for 1986 and 1987.

worldwide and import competition, have also made deregulation imperative. These forces have been evident as well in the move toward deregulation in many other countries, among them the US, United Kingdom, Japan, Spain, Turkey, New Zealand and Chile. Technological change in the manufacturing sector has been rapid, so that flexibility in both product and factor markets has become very important. It has also made competitiveness more important in the service and informational industries. This latter trend has created the need for changes in, for example, telecommunications regulations.

1.20 The Mexican Government has already initiated major efforts at deregulation, in tandem with the macroeconomic reforms. It has emphasized reform of trade policy, removing or reducing many of the trade barriers. It has also removed or at least suspended many of the other incentive mechanisms, particularly those affecting industry. Since 1989, it has made substantial progress in reforming the tax system and its administration, the financial sector, the direct foreign investment regime, the trucking and petrochemical sectors, and it plans to implement changes in the telecommunications sector soon.² The Government recognizes that further changes are needed in some of these and other areas.

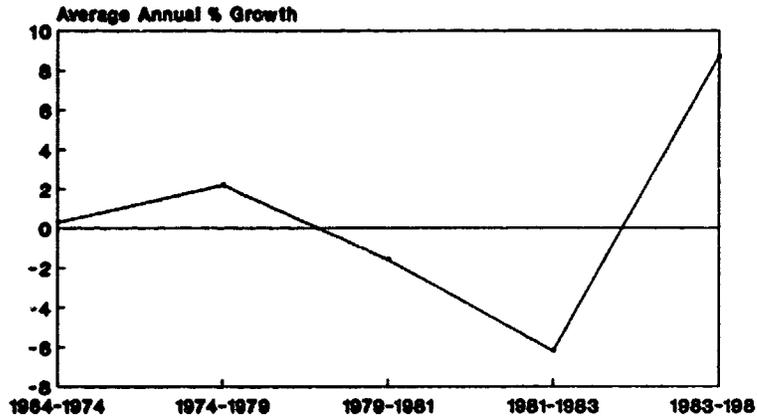
D. Organization of the Report

1.21 The objective of this report is to review selected regulatory issues, with particular emphasis on industry, that the deregulation has and will potentially address. The report surveys selected specific regulatory policies affecting various markets in the economy -- goods, factors and services -- that are important to industrial adjustment. The coverage of topics considered important is broad, given that microeconomic policies are varied and diffused, affecting many markets and activities. The topics were selected based on firm interviews and surveys as well as discussions with the Government. This report therefore covers industrial promotion policies, industrial credit, labor regulations, tax policy, and road transport and telecommunications regulations. The chapter on market structure is a first step toward analyzing the consequences of this set of policies in a more general way.

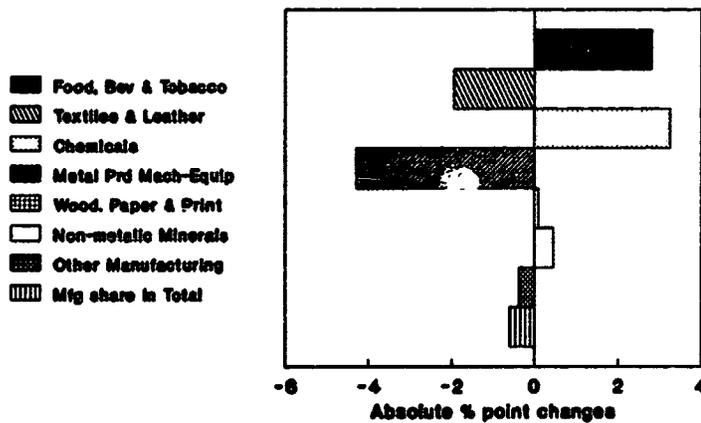
1.22 In each of these areas, the analysis focuses on the nature of the policies and identification of the most important issues relating to the incentives for industry and firms' capacity to adjust. Particular attention is given to the principal factors, specifically Government policies, that have prevented growth and that could make good performance difficult to sustain. Rather than a quantitative analysis of impact, however, the study relies on partial surveys and illustrative cases to support the observations. This approach is most apparent in the analysis of industrial programs and the trucking industry, where the necessary data were not readily available.

² Except for the tax reforms, most of the regulatory reforms were announced in 1989, after the analysis of this report was completed. The changes, as noted in the various relevant chapters, are similar to the report's initial recommendations.

**Figure 1.4 Total Factor Productivity
Manufacturing
Growth Rates 1964-1985**



**Figure 1.5 Structure: Manufacturing GDP
Changes in the Structure
(Mexico 1980-1987)**



Finally, recommendations for policy changes are given. Whenever relevant, the chapters also conclude with a discussion of the policy changes announced since 1989.

1.23 The report begins with a discussion of the policies that directly affect the industrial goods market. It then discusses the policy issues affecting the factor markets -- capital and labor. The role of the Government in the area of services is discussed next -- taking as examples the transportation and telecommunications industries. The content of each chapter is described below.

1.24 Policies Affecting the Market for Industrial Products (Chapter II). Chapter II discusses the most prominent instruments of industrial policy. While trade policy has provided the broad structure of incentives, other policies have been used to guide the product markets. Until recently, tax credits, industrial credit and energy subsidies have been combined with import protection to promote priority industries. These instruments, along with regulatory mechanisms, have, for example, been applied to further promote the automotive, pharmaceutical and microcomputer industries. Still, other industries, in particular heavy intermediate products such as iron and steel, received protection more from tax credits, energy subsidies and direct subsidies than from quantitative restrictions. Further, the strategy for industrial development has emphasized the role of state-owned enterprises in the production of heavy intermediate goods with large economies of scale. Many of the large parastatals have dominated these sectors for the past two decades, although major privatization plans have been announced in 1990. Finally, the chapter discusses the scope of price controls in industry.

1.25 Policies Affecting Factor Markets (Chapters III, IV and V). Chapter III analyzes the policy of preferential credit to industry, in particular its impact on the distribution of credit across industries. For decades the Government used its banking system to channel financial resources to sectors considered priorities for economic growth. An array of preferential credit schemes emerged that until recently continued to be embedded in the Mexican system of financial regulation. Furthermore, the system, in particular the development banking system, channeled a very high proportion of financing to just a few industries and a few publicly owned enterprises.

1.26 Chapter IV looks at the nature of income tax policies and their effects on investment decisions and on industry's competitiveness in attracting direct foreign investment. It reviews the numerous changes made in the system in the past three years, noting many of the reforms that have made the system less biased toward debt financing in periods of high inflation. In analyzing the tax systems of 1987 and 1989, extensive use was made of calculations of marginal effective tax rates to determine the impact of the changes on the wedge between returns on and costs of investment.

1.27 Chapter V discusses selected aspects of labor regulation. The Mexican labor market is characterized by extreme wage flexibility and rather rigid institutions and practices. In discussing the institutional issues, the chapter focuses on a few of the laws and regulations governing union activities and job security and how they may constrain the allocation of labor

from one firm (or use) to another. Those interviewed for the study indicated that they have coped with the regulations by undertaking only small changes in employment. They foresaw major problems when more extensive reallocation is required. The report, however, does not deal with the details of the operation of unions and firm-union negotiations. The report recognizes the preliminary and limited nature of its findings in this area and the need for further work.

1.28 Regulation of the Service Industries (Chapters VI and VII). Rapid technological change and dwindling fiscal resources have made it important to reassess the role of Government in the major industries, especially service ones, in which it has traditionally been dominant. Major efforts have been undertaken in recent years to increase the efficiency of many service industries through regulatory reform. This study looked at the regulatory environment and its changes of two service industries -- trucking and telecommunications. They are useful case studies, involving an industry whose market structure is naturally competitive (trucking) and another whose market structure has elements of a natural monopoly (telecommunications).

1.29 Chapter VI deals with the trucking industry. It analyzes in some detail how the system of trucking regulation during the eighties has affected industrial users, documenting the regulatory practices and linking them to the major problems users faced. Until recently, the regulations consisted of a system of route concessions, permits to transport cargo, administered prices and cargo centers. These regulations created entry barriers that removed the competitive pressure on truckers to improve their services. The chapter also describes the recent deregulation of the trucking industry and some of its initial results.

1.30 Chapter VII discusses the nature and potential implications of telecommunications policies in Mexico. Faced with an international market where telecommunications is important to improving competitiveness, business users have become more aware of the slow growth and poor quality of these services in Mexico. The decline of the industry in the past 15 years has been attributed to the regulatory policies. Among those discussed in this chapter are pricing and tax policies, the regulatory structure and competition policy. Some recommendations are presented, along with some short-term measures that could complement regulatory change to foster an increase in the supply of these services to the private sector. The chapter also discusses elements of the Government's plan to deregulate the sector between 1989 and 1994.

1.31 Policy Determinants of Market Structure (Chapter VIII). In the preceding chapters, the impact of each policy area on competition and firm behavior are mentioned consistently. Chapter VIII shows in a more systematic way the partial effects of these policies on competition through its impact on the structure of market concentration in industry as a whole. Data from the industrial census are used.

CHAPTER II

INDUSTRIAL POLICIES

2.01 Mexico's policies toward the market for industrial products have been based on a strategy of selective promotion. Until 1985, the mechanism for implementing this approach was incentives under the trade policy, which provided higher protection to priority than to other industries.¹ Quantitative restrictions and other instruments underlay industrial programs to benefit the automotive, pharmaceutical and microcomputer industries, guided administratively through a set of regulations. Other incentives, particularly tax and industrial credits (see Chapter III), increased the level of protection in other priority industries. The Government (through industrial parastatals) produced intermediate goods considered strategic to industrial development, notably iron and steel, fertilizers and petrochemicals, and regulated their supply through entry and price restrictions. The principal objective was import substitution, although regional development and adjustment to the 1983 crisis have also been important. In 1979 the Government published versions of its strategy and related objectives, which were contained in the Decree to Promote Employment in Priority Industries and to Promote Regional Development (revised in 1986), and again in 1984 in the National Program for Industrial Development and External Trade (PRONAFICE), 1984-88.

2.02 Despite increasing trade liberalization, the Government has retained industrial programs and industrial parastatals as instruments of industrial policy, although it plans to reduce some regulations. Measures of effective protection still indicate that the incentive system continues to protect a few priority industries, for example, automobiles, iron and steel, basic chemicals, nonmetallic minerals and electrical machinery. In addition, the regulatory environment and access to incentives have sheltered industrial parastatals from competitive pressure. Many have basically been inefficient, and the pricing rules and contractual relations established by parastatals with users and suppliers have made coordination between parastatals and private firms difficult. In 1990, the Government announced a gradual reduction of the regulations for the automotive, pharmaceutical, microcomputer and petrochemical industries, as well as privatization of some industrial parastatals. It has also announced plans to privatize a few major industrial parastatals soon.

2.03 Another area of industrial policy where changes may be needed is the process for licensing, establishing and operating an enterprise. This process, which applies to industry as a whole, has added to the general cost and difficulty of doing business.

2.04 This chapter surveys several areas of industrial policy beginning with a brief description of the evolution of the trade policy regime. It then analyzes two other measures used to promote priority industries: industrial programs; and direct participation by the Government in production (industrial

¹ See also "Mexico: Trade Policy, Industrial Performance and Adjustment," Report No. 6215-ME, June 23, 1986.

parastatals). Price controls are discussed separately. Credit policy, also an integr. part of the industrial targeting policy, is discussed in Chapter III. Other important areas in industrial policy, such as direct foreign investment, are discussed in other World Bank papers.² This chapter also analyzes the bureaucratic licensing procedures. The chapter concludes with some policy recommendations and a description of the planned policy changes in those areas announced by the Government in 1990.

A. The Evolution of Trade Policy

2.05 Mexico's trade policy traditionally had been geared toward import substitution. However, since 1985 it has been liberalized substantially. Quantitative restrictions (QRs), which have been the key instruments used to protect domestic industry from import competition, have been lessened progressively and tariffs reduced. In addition, export promotion measures have been introduced. This section focuses on these changes.^{3, 4}

2.06 The coverage of QRs has declined drastically since mid-1985 and is currently limited to only a few industries: coverage went from 97% of production (1986 values) to 22.3% between 1985 and 1989 (Annex Table A2.3 shows the breakdown of QRs by industry).⁵ Oil and derivatives, and selected agricultural and agroindustrial products, account for the major portion. Automobiles, selected auto parts and pharmaceutical, which have domestic industrial programs (see next section), are also still subject to QRs. In contrast, QRs have been almost completely removed from most intermediates and capital goods.

2.07 The Government also reduced tariffs dramatically, with the maximum tariff dropping from 100% in 1985 to 20% in 1988. The tariff structure remains basically unchanged, however, reflecting a typical escalation by stage of production. Tariffs are still relatively high on consumer goods (particularly durables) but lower on intermediates and capital goods.

² See also "Direct Foreign Investment in Mexico. Past Patterns and Future Strategy," Report No. 7146-ME, September 1988.

³ This section is based on "Mexico: Trade Policy Reform and Adjustment," Report No. 7314-ME, August 23, 1988; "Mexico: Trade Policy Reform, 1985-1989", World Bank, draft, 1989.

⁴ In addition to liberalizing of import and export controls, the Government has also realized the need to improve Mexico's access to foreign markets, many of which have restricted on Mexico's exports. Membership in the GATT was an initial step. It also plans to discuss a free trade agreement with its largest trade partner, the United States.

⁵ Regulations affecting imports or non-tariff barriers in addition to import licenses or QRs are health and sanitation licenses for imports issued by the Ministries of Health and Urban Development and permits for selected agricultural licenses issued by the Ministry of Agriculture.

2.08 Export regulations have also been liberalized significantly since 1985. The production coverage of export licenses declined from 48.9% in 1985 to 24.8% in 1988. Nearly half of this coverage is on agricultural and agroindustrial products. Many of these export licenses have been used to guarantee some export monopolies, such as those held by CONASUPO and PEMEX, support domestic price controls, and encourage processing of raw materials in Mexico. Export licenses are also used for goods where international quota agreements exist, for example, tobacco, coffee, live animals and selected seafood.

B. Programs to Develop Priority Industries

2.09 Industrial Programs. Despite increasing trade liberalization, many of the industrial policies introduced in the early eighties remain.⁶ As part of the industrial strategy outlined by PRONAFICE in the eighties, programs to develop priority industries where private enterprises were predominant were developed under the guidance of SECOFI. These industry-specific programs, called programas integrales de fomento or programas de rama, were developed for the automotive industry (published in September 1983 and August 1984), pharmaceutical (February 1984 and April 1985) and capital goods (1982). A program for microcomputers has been administered in practice since 1985, although it was not published. These post-1983 programs merely revised and integrated the existing import-substitution policies for those industries (see Annex 1 for details on the individual programs). A fifth program -- on the petrochemical industry -- was issued in 1986; it aimed at defining rules for entry by private sector firms in an industry that previously had been dominated by the state (this program is discussed in more detail in the subsequent section). Overall, these five industries account for 4.3% of GDP (1986 values) or about 20% of manufacturing output.

2.10 The programs have specific goals. Import substitution is a major one, and they specify targets for the industry's trade balance. A specific objective of the automotive, microcomputer and pharmaceutical industries has been to eliminate the large trade deficit of the early eighties. The pharmaceutical program also calls for 98% of all pharmaceutical products and 60% of all their active ingredients, pharma-chemicals, to be produced domestically by 1989. The programs' other objectives include developing national firms (i.e., fully Mexican-owned), export promotion, reduction of domestic and import price differentials and, in the specific case of pharmaceutical, improvement of product standards.

2.11 The programs embody both protection and regulatory measures (Table 2.1). The major promotional measures are QRs and other non-tariff barriers (NTBs) to reduce import competition. The remaining QRs in the manufacturing sector apply to industries under the industrial programs. The rules for government procurement also provide domestic firms an advantage through a price premium, particularly on pharmaceutical and microcomputers. In addition, firms may import duty-free. Domestic content requirements (DCRs) protect the auto parts and pharma-chemical industries. Pharmaceutical products are protected, primarily through sanitary regulations.

⁶ The Government has announced the intention to change many of these policies in the next few years.

Table 2.1: INDUSTRIAL PROGRAMS

	<u>AUTO TERMINAL</u>	<u>AUTO PARTS</u>	<u>PHARMACEUTICALS</u>	<u>PHARMUCHEMICALS</u>	<u>MICROCOMPUTERS</u>
Benefits					
Protection	QRs (import licenses, practical prohibition on imports)	20% tariffs ^a	Stringent quality control regulates imports	QRs (licenses and quotas on imports)	QRs
Tax Credits (suspended since December 1987)	--	20% on investment and employment	Up to 30% of investment ^b and employment for Mexican firms	Up to 30% of investment ^b and employment for Mexican firms	30% on investment and employment; 10% on purchase of domestic parts and components ^c
Public Sector Procurement	--	--	Restricted to domestic suppliers, with preference to Mexican firms.	--	Open to foreign enterprises and with permit for Government agencies
Exemption from Tariffs on Inputs (Rule 8)	Reduction of tariffs to zero	Reduction of tariffs to zero	--	--	Reduction of tariffs to zero
Entry Restrictions					
DFI Ownership	100% ^c	40%, and entry is granted only if parts are not already produced by domestic firms	100%, but foreign firms may not acquire established Mexican-owned firms; new DFIs may not displace nationals	100% ^d	100%
Licensing	--	--	None	Restricted to a list of SECOFI projects	--
Property Rights	--	--	Weakly defined ^e on product technology	Weakly defined on product technology	--
Production Restrictions					
Number of Lines	One line for domestic market. No restriction for exports	--	--	--	--
DCR	60% domestic market 30% export market	60% domestic market 30% export market	Criteria apply only to firms seeking preferential treatment in public procurement	Criteria apply only to firms seeking preferential treatment in public procurement	Only assembly requirements
Excise Taxes	5-25%	--	--	--	--
Foreign Exchange Balance	100% requirement (50%--coming from domestic auto part exports and 20% at most from maquila)	--	--	--	100%
Price Controls	--	--	Detailed report for basic and generic products; reporting only for the rest	Flexible, subject to general law of price controls	--
Registration	--	--	Annual register to check for good manufacturing practices (SECOFI); register of Pharmaceutical Products (SS and SARH).	Annual register to check good manufacturing practices (SECOFI); register of Pharmaceutical Products (SS and SARH).	--
Quality Norms	--	--	--	--	Compliance with national or international standards
Maximum Price Differential	--	--	--	--	15% of list prices

Source: SECOFI.

^{a/} Until early 1988, average tariffs were 30%; NTBs covered 40% of production; and there was a mandatory list of parts to be included in the DCR for terminals.^{b/} Suspended since December 1987.^{c/} Until 1988 a 49% ownership limit existed for truck assemblers using diesel motors.^{d/} Foreign firms can enter only if domestic firms do not enter and in addition must fulfill foreign exchange balance and location restrictions.^{e/} In January 1987 the law of patents and trademarks was modified to allow patents on product and process technology for pharmaceutical products^{f/} Effective since 1988.

2.12 The programs further regulate entry into the industries through restrictions on direct foreign investment (DFI) and licensing. Normally, DFI among entrants is limited to a percentage of foreign ownership or through prohibition of foreign firms. For example, foreign ownership in the auto parts industry may not exceed 40%, and it was initially prohibited in the computer industry. The apparent objective of the DFI regulation is to provide domestic firms "first-mover" advantage, or at least the ability to become competitive prior to having to compete on an equal basis with multinationals. However, in most cases the regulations are not specified as temporal and have often been retained for a long time. Entry into the auto parts and pharmaceutical industries is regulated by the licensing of new entrants: approval is given only when firms or incumbents do not produce enough for the domestic market. The automotive program also seems to limit entry into the production of automobile terminals.

2.13 The programs regulate firm operations through DCRs, foreign exchange balances and investment programs. The automotive program imposes limitations on scale and product lines, while the pharmaceutical industry has price controls, quality norms and rules on R&D expenditures.

2.14 Since 1985, the Government has maintained QR protection but has reduced many of the programs' other incentives and regulations. It liberalized the procurement rules, with preferential treatment for domestic firms now limited to procurement by the Federal Government. In December 1987, it suspended the tax credits. It also reduced the energy subsidies. Over time, the DCRs have been brought down, mainly in response to the numerous violations. For example, pharmaceutical and computer firms have whittled away at their requirements through negotiations or by violations. Some computer firms have also set up "dummy" companies to import parts that can be resold locally and counted as domestic content.

2.15 The incentive and regulatory framework of the five programs has several characteristics. First, protection from imports, particularly through QRs, does not appear to be temporary: the automobile industry has been under QRs since 1929 and pharmaceutical since the 1970s. The programs generally do not specify expiration dates, except for the pharmaceutical program, which has one of 1989. While the microcomputer program states that firms may obtain protection lasting five years, this arrangement is subject to renewal. Overall, the duration of the protection has produced substantial resistance to removing the QRs, and may have contributed to the inertia in liberalizing these industries.

2.16 Second, the programs encourage exports by cross-subsidizing them through domestic protection. To promote exports in the automobile program, protection still pertains to the domestic supply of automobile terminals, while exports have been subject to increasingly fewer regulations since 1985. The DCRs of terminals exported were reduced from 60%, the requirement for terminals sold to the domestic market to 30%, and the restrictions on the number of lines (types of automobiles) for export were eliminated. In 1988, the Government also reduced the DCRs for exports of auto parts. To promote exports in the pharmaceutical industry, domestic suppliers were protected, but export targets were set.

Table 2.2: INDUSTRIAL PROMOTION POLICIES BY INDUSTRY, 1987-88

	QRs <u>a/</u> (NTBs)	DCRs	Tax Credit <u>b/</u>	Duty- free Inputs	Preferential Credit <u>c/</u>	Parastatals	Energy Subsidies ^{e/}
Priority industries w/ industrial programs							
Pharmaceutical	X		X				X
Pharmo-chemicals	X	X	X				X
Microcomputers	X	X d/	X				X
Automobiles	X	X d/	X	X	X		X
Auto parts	X	X					X
Petrochemicals						X	X
Other priority industries							
Iron and steel			X		X	X	X
Cement			X			X	X
Cellulose/paper			X		X		X
Basic chemicals			X		X		X
Fertilizers			X		X	X	X
Transport equipment			X		X	X	X

Source: Various sources.

a/ Before the trade liberalization that started in 1985, all of these industries had QRs.

b/ The tax credits were suspended in December 1987.

c/ see Chapter III for details.

d/ The DCRs serve to regulate microcomputers and automobiles rather than being incentives.

e/ Energy subsidies were given through low prices. Energy subsidies have declined since 1987.

2.17 Third, the programs' entry requirements may have contributed to the rather weak domestic competition in the affected industries. A recent report on the automotive industry says that the number of firms has been very stable and below that observed in other countries of similar per capita income. For example, a survey of auto parts firms in 1981 showed that only one was set up in the seventies, a period of high growth for the industry. In the case of the pharmaceutical industry, the public bidding for procurement by Government agencies normally fails because very few domestic firms actually compete in the same types of products. In the petrochemical industry, one firm tends to dominate within specific product groups where private sector entry is subject to licensing.

2.18 Other Priority Industries. SECOFI also prepared guidelines to promote other priority industries -- food products, textiles, shoes, furniture, consumer appliances, cellulose and paper, cement, iron and steel, basic chemicals industries, and transport -- although the guidelines were not issued as programas de ramas. These priority industries correspond to those in which industrial parastatals are important producers. Unlike the industrial programs, whose major incentives stem from QRs and NTBs, the major incentives in these other priority industries have been credits and energy subsidies (Table 2.2). In 1987, the Government suspended the tax credits and reduced the subsidies. The parastatals have received many industrial incentives, some from the banking sector (see Chapter III).

2.19 In administering the incentives to all priority industries, SECOFI granted the incentives and regulated participating firms case-by-case. The amount of incentives given has depended on the outcome of SECOFI's

negotiations with individual firms, a practice that has led to arbitrary and non-transparent rules. For example, it is common that promoted pharmaceutical and computer firms have different DCRs and other provisions. This case-by-case approach may also have led to the concentration of tax credits on a few industries -- steel, nonmetallic minerals (cement) and machinery -- and a few large firms, often public enterprises (see Annex 3).

2.20 The strategy used to choose the priority industries seems to have relied heavily on administrative guidance rather than market signals. The Government selected the priority industries based the following criteria: how important (in terms of percentage share) the industries were in Mexico's manufacturing sector and its export potential, calculated based on the share of exports in the industry's production in the early eighties. The strategy did not include a mechanism to allow for changes in priorities.

2.21 The performance of the priority industries has been mixed. For example, automobile and auto parts have been successful in meeting the objectives of increasing output and exports. Automotive exports grew from US\$340 million in 1983 to US\$1.7 billion in 1987, while exports of motors and other auto parts rose from US\$500 million to US\$1.4 billion in the same period. As will be shown later, the petrochemical industry has also grown rapidly in the past few years. The pharmaceutical industry has met most of its import-substitution targets, and output grew at an annual rate of 2% between 1981 and 1986. Exports, however, have been well below what was intended, reaching only 7% of domestic production. The domestic pharmaceutical industry has not developed as desired. The price difference between imported and domestic microcomputers has dropped substantially, but exports of microcomputers have not been observed.

2.22 According to earlier World Bank reports, productivity growth has been poor in general, despite marked improvements since early 1985. The reports showed that a large part of the growth in output in many industries was fueled by large increases in capital rather than productivity growth. There is no evidence that would link the relative levels of productivity growth with the levels of protection. However, the evidence seems to indicate that productivity growth tends to be lower in industries that had been protected by tariffs. The lowest rates of total factor productivity growth between 1979 and 1983 were in wood products, paper and cellulose, nonmetallic minerals, basic metals (especially basic steel products) and metal products (including automobiles) and machinery (see Annex Table A2.2).

C. Direct Government Participation in Priority Industries

2.23 As in many other countries, Mexico's state-owned enterprises have been important producers of priority goods for industrial development, for example, steel, fertilizer and petrochemicals, since the early seventies. The Industrial Plans of 1979 and 1986 merely formalized the Government's direct involvement in industry. The rationale for its participation has varied, including spearheading industrialization through investment in strategic products, achievement of large economies of scale and prevention of DFI.

2.24 Prior to the sixties, the Government was involved directly in industry through investments in electricity and petroleum (Annex Tables A2.4 to A2.5). Since the sixties, it has also invested in steel and other

industries to the tune of about 10% of Federal public investment by the early eighties, while investment in industrial parastatals overall accounted for almost half of total public investment by 1981, mainly as a result of the increase in investments in the oil industry. On the other hand, the shares of investments in communications and transportation declined up to 1985, and then started to rise.

2.25 Parastatals accounted for 11.5% of manufacturing production in 1975, 12.0% in 1980 and 16.3% in 1984. Without petroleum, their shares were 6.1% in 1975, 7.4% in 1981 and 8.8% in 1984. The major portion of production by parastatals has involved petroleum refining and basic petrochemicals (accounting for 47.6% of industrial production in 1985) and non-petroleum intermediate goods (27.8%) (Table 2.3). The parastatals in the non-oil manufacturing sector, after expanding rapidly between 1978 and 1981, have declined since 1985.

Table 2.3: INDUSTRIAL PARASTATALS BY PRODUCT CATEGORY
(% of total production by parastatals)

	1965	1970	1975	1982	1983	1985
Consumer nondurables	5.7	9.4	8.9	17.1	19.7	14.6
Consumer durables	2.6	8.2	9.3	10.4	7.4	2.5
Non-petroleum intermediate goods	38.9	43.7	28.8	30.4	34.5	27.8
Capital goods	2.5	3.6	3.5	3.3	4.2	2.5
Subtotal	49.7	64.9	50.5	61.2	65.8	52.4
Petroleum refining and basic petrochemicals	50.3	35.1	49.9	38.8	33.8	47.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: INZGI.

2.26 Industrial parastatals are concentrated in a few product categories. In 1988, they were in only 12 industrial categories. Among the major ones are iron and steel, fertilizers, packaged fish and seafood, and transport equipment.

2.27 Parastatals have been the dominant producers in some industries (Annex Table 2.6). Until 1986, they had a monopoly over the production of petroleum and its derivatives. In that year, the Government opened secondary petrochemicals to the private sector. Parastatals now account for more than 50% of gross production in the sugar, fertilizer, iron and steel, and transport equipment industrial subsectors (ramas); in the latter, it increased from 38.4% to 58.7%. They are less important in the automotive industry and in the packaging of seafood products.

2.28 The Regulatory Environment. In the majority of industries where parastatals dominate, regulation of entry and prices (discussed later) is common. Certain product groups are reserved exclusively by law for the public sector, including petroleum and other hydrocarbons, basic petrochemicals, radioactive and strategic minerals, nuclear energy, electricity, railroads, telegraphic and radio communications, banking and other activities as specified by law. The extent to which private enterprise is allowed often

depends on how each product category is interpreted, e.g., basic petrochemicals and "strategic" minerals. Distribution is also often monopolized, as the complex system of price controls and subsidies frequently requires an administering distribution agent, the case with fertilizers and sugar. The burden of the subsidies in the distribution system might make it sustainable only for a huge public institution.

2.29 In some industries where there are large industrial parastatals, entry is not explicitly restricted but is still difficult. For instance, price controls make it unprofitable for private firms to produce fertilizers. Moreover, the informal business ties between public enterprises often lead to huge cost advantages for public incumbents. PEMEX, for example, sells ammonia, a basic input for urea that only it can produce, to Fertimex at 50% of its export price. In the seventies, many private producers of auto parts complained that access to iron and steel was very difficult since the Government made production for publicly-owned producers of auto parts the priority for public steel companies. Favored industrial groups also benefit from large cost advantages in the supply of various inputs, such as petrochemicals to selected producers of plastics.

2.30 Other sources of cost advantage for the public sector have been fiscal incentives and financing (see the next chapter). Parastatals had access to large amounts of foreign lending, for example, during the early eighties, probably because lenders regarded them as low risk by virtue of implicit or explicit Government guarantees. Parastatals have also absorbed a disproportionately large share of development and commercial bank lending during the eighties (see the next chapter). In the past, fiscal incentives have also been more readily available to them. SICARTSA, the steel parastatal, received the largest share of fiscal incentives in the late seventies.

2.31 QRs and export controls remain in some industries dominated by public enterprises. QRs are important for sugar, where the domestic price is maintained above international prices. In other areas such as fertilizers, the QRs are often redundant because price controls discourage imports. While the QRs on petrochemicals and steel have been eliminated, domestic price controls still discourage importing, and their exports are also regulated. (The scope of price controls in Mexico will be discussed in Section C.)

2.32 The Petrochemical Industry: A Case Study on the Link Between the Public and Private Sector. Development of the petrochemical sector in Mexico has been relatively recent and very impressive, with an average growth rate of 11.1% per annum between 1975 and 1985. The sector's share in national GDP has gone from less than 1% in 1960 to an estimated 2.5% in 1985, more than twice that of the steel sector and 1% higher than that of the automotive industry. Most of the observed dynamism of the sector during 1980s was a result of large-scale investments by the private sector. The petrochemical industry provides a good illustration of the problems private users encounter in industries dominated by the public sector. PEMEX, the major parastatal producing oil products and petrochemicals, is an important supplier to the private sector and influences the competitiveness of downstream users. Private producers of secondary petrochemicals use as inputs basic petrochemicals (feedstock), that are produced by the parastatal PEMEX.

2.33 Under the petrochemical law, the Mexican Government controls the production of oil and gas as well as basic petrochemicals through PEMEX. The Mexican Petrochemical Commission, consisting of PEMEX, the Ministry of Energy, Mines and Parastatal Industry (SEMIP) and SECOFI, licenses private companies to produce secondary petrochemicals, sets the prices for feedstock (basic petrochemical inputs) for the secondary petrochemical sector, and defines development policies for the sector.

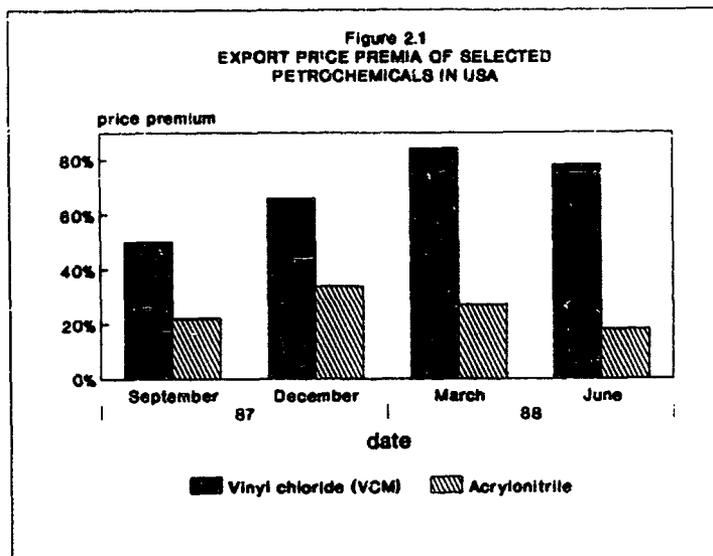
2.34 In 1986, the commission issued a development program for the petrochemical industry. It narrowed the list of basic petrochemicals PEMEX alone can produce to 34 products and reclassified the remaining items as secondary petrochemicals, which the private sector could now produce. The program also established a set of rules for the secondary petrochemical industry. First, the private sector was to be responsible for imports of feedstocks (basic petrochemicals) that PEMEX could not supply. (Previously, PEMEX had supplied all feedstocks to the private sector, importing whatever deficit there was and selling the products to secondary petrochemical companies.) Second, the program makes PEMEX's pricing of basic petrochemical inputs flexible, even though in practice it sets prices at 80% of international levels. However, the Stabilization Program introduced in 1987 led to a freeze on the prices of basic petrochemicals. Since international prices have increased, the prices of domestic petrochemicals have been below 80% of international ones. In mid-1989 the list of basic petrochemicals was reduced to 20.

2.35 The major problems the secondary petrochemical industry faces are the uncertainty of PEMEX's supply of feedstocks and the high cost of importing feedstocks. PEMEX's supply of petrochemical feedstocks has been uncertain; production has been falling below planned levels because many of its investment projects have been delayed, and several plants have been operating at well below capacity.⁷ Although the private sector can import feedstock that PEMEX cannot supply fully, it imports at prices higher than its "international" levels. The reason is the worldwide trend toward vertical integration in petrochemical production, which means that the petrochemical feedstocks in other countries are produced mostly for captive consumption. Their effective prices are their transfer prices imputed as a cost of integrated firms. Large companies that are not vertically integrated have established long-term contractual relationships with suppliers that afford favorable contract prices well below the spot prices during tight market conditions. Because Mexican companies are viewed as transitory customers, they are not always given preferential prices.

2.36 By way of illustration, Mexican PVC companies are importing vinyl chloride (VCM), the main basic petrochemical raw material, at a US FOB price that is more than twice the price paid by competitors in the US. The actual weighted 1988 quarterly prices of VCM in Mexico were about 20% to 25% higher than in the US, a gap that seems to have increased since mid-1987. If PEMEX had maintained its selling prices at 80% of US domestic prices, the cost

⁷ Prior to the 1986 Petrochemical Program, the Petrochemical Commission was criticized for licensing only new projects that used technical processes which consumed feedstocks being produced by PEMEX. Cases are reported where the wrong technology choice was made to comply with this criterion.

differential would have been even greater -- 25% to 30%. Similarly, Mexican producers of acrylic fibers that in 1987 imported slightly over one-half of their feedstock, acrylonitrile, had to import it at a premium over the domestic US sales price, although a proportionately smaller one than for VCM (Figure 2.1). The Stabilization Program of 1987, which kept PEMEX's selling prices fixed in nominal terms since December 1987 even as international prices rose, has reduced those price premia.



D. Price Controls and Their Impact

2.37 Price controls have been part of Mexico's industrialization strategy since the fifties, although the policy has gone through three clear stages. The controls imposed between the early 1950s and 1974 focused on primary products and services that were major inputs into industry, mainly to provide key industrial inputs at low and stable prices to the country's developing industrial sector. Between 1974 and 1984, the controls had the additional objective of containing inflationary pressures and protecting the real wages of consumers. In addition to the many controls over strategic industrial inputs, the Government added new ones to basic consumer goods. In the third stage -- since 1985 to the present -- the Government has lifted the price controls on many commodities and, except for a few basic commodities under strict controls, made price-setting more flexible. The production coverage (1983 values) of SECOFI-managed price controls dropped from about 29% in 1982 to 21% in 1986.

2.38 These controls can be grouped into two categories: those for privately produced goods managed by SECOFI; and those for goods and services produced by the public sector, for which several Government agencies are in charge. For instance, AZUCAR S.A. manages sugar prices, CONASUPO basic food items; in industry, PEMEX controls the prices of oil, gasoline products and petrochemicals, while SECOFI manages steel prices.

2.39 SECOFI's price control system has three categories: strict price controls, registered controls and price registration. Under the strict price controls, prices are determined via cost analysis. About 25% of production falls under this category. Under the registered controls category, which affects about 6% of production, price changes are determined through a combination of periodic cost analysis by SECOFI and partial indexation to inflation. This system generally allows semestral increases in prices of up to 90% of the rate of inflation (based on the Consumer Price Index for the period), and more if the cost analysis shows that the rate of inflation for products within the rama exceeds the national rate. Producers affected by this system submit their requests for increased prices at regular intervals, together with a cost analysis whenever necessary, and SECOFI theoretically responds after five days.

2.40 The rules for changing prices under the registered controls category vary across commodities, with different weights attached to the cost analysis required to justify the price increase. For instance, the prices of steel and iron products are adjusted automatically by 95% of inflation every two months. On the other hand, price increases for soaps and detergents have to be justified by a detailed cost analysis and tend to be approved only if the cost rose by more than 10%. The time it takes SECOFI to respond to requests for price increases also varies. For example, it tends to delay approval of price increases for pharmaceutical products, often responding only after 60 days.

2.41 Table 2.4 shows the structure of products with price controls and their category. The coverage of strict price controls tends to be higher across agricultural and agroindustrial products, which together account for 19.2 percentage points of total production under strict price controls, than for manufacturing. Items with strict price controls (including those managed by CONASUPO and AZUCAR, S.A.) include basic grains, oilseeds, sugar and molasses. Agroindustrial products include basic food products. The majority of the products under registered controls are in nonagro-based manufacturing: the major items are iron and steel, selected consumer durables and nondurables, and food packaging products.

2.42 Price controls have existed jointly with export controls. Of the 43.4% of domestic production subject to price controls (excluding the SECOFI free registered category), 34.5 percentage points are also subject to export controls.

2.43 The nominal protection of price-controlled items varies across products and over time. Comparison of the prices of 100 products in the basic consumer basket during the period 1984 to 1988 shows that basic food items, most likely items under strict price controls, tend to have had negative nominal protection. The domestic prices of milk, eggs, bread and bread products, wheat flour, some vegetable oils, some paper products and some pharmaceutical products were almost half the international prices. Except for some basic intermediate inputs, such as nonflat steel and oil products, the nominal protection of nonfood products subject to registered controls or free registration have tended to be positive. Of course, the price comparison needs to consider the limitations of the price comparisons used in estimating nominal protection. Not only do quality differences make it difficult to compare the prices of "similar" products, but the lags in the responses of

domestic prices to changes in the exchange rate present problems in isolating the real impact of price controls on nominal protection.

Table 2.4: COMPOSITION OF PRODUCTS WITH PRICE CONTROLS, ^{a/}
NOVEMBER 1988
(% of 1986 GDP)

Product Category	Strict Controls	Registered Controls	Registered Prices
Agriculture ^{b/}	7.4	-	-
Food products (agroindustry)	11.8	0.4	1.8
Food packaging items	0.02	0.3	0.4
Iron and steel	-	4.1	-
Petroleum & derivatives	6.32		
Consumer nondurables	-	0.7	0.2
Consumer durables	-	0.6	1.4
Others (including fertilizers)	-	0.4	.9
Total	25.54	6.5	4.7

Source: SECOFI and World Bank staff estimates.

^{a/} Utilities are excluded.

^{b/} Agriculture includes items under CONASUPO's price controls, livestock, and coffee administered by INMECAFE.

2.44 The price controls have led to sporadic shortages of some products over time. Among the items that have been seriously affected are milk, paper products, pharmaceutical, meat and bread products (cookies). Further, investment in meat and milk products has fallen. In pharmaceutical, many firms are producing fewer controlled products and more of others. Price controls have also led to the proliferation of different brands for similar pharmaceutical products: instead of waiting for approval from SECOFI, companies issue new brands whenever a price increase is desired. Another major concern has been the disincentive posed by the price controls on the development of steel and agroindustrial products.

2.45 Lately the Government has attempted to move domestic prices closer to their international levels. Still, fertilizer prices have persistently been well below international levels: in April 1987, the unweighted average of the ratios between domestic and international prices was 47% and in September roughly 60% (with a range from 48% to 83%). In oil products, the unweighted average of this ratio was 28% in 1980 and 77% in August 1988. After a long period of cost-based price controls, the Government raised steel prices by 95% of the rate of inflation and then in September 1987 adjusted them to border levels. However, as a result of the freeze by the Solidarity Pact, the domestic prices of flat products were 21%-49% lower than international ones by August 1988. The prices of electricity and energy have also been adjusted closer to international levels than what prevailed in the early eighties.

2.46 The price of sugar cane to growers has been above international levels, and downstream industrial users of sugar pay 183% of the world price. That is, they cross-subsidize other consumers, who pay about 91% of the world price. Because of the pricing of sugar cane to growers, combined with many other regulatory measures, the decline in the sugar industry has been much slower than that in other sugar-growing countries. On the other hand, major industrial users, mostly beverage companies, have started to acquire sugar mills to integrate vertically so as to avoid the high sugar prices.

2.47 In sum, the system of price controls has affected mainly prices of a few basic nondurable consumer items and intermediate goods and services produced by major parastatals. While these price controls may have been important in developing Mexico's industrial base, such as cheaper steel to heavy industries, the system does not contribute as much to a more outward-oriented industrial strategy. The Government has addressed this issue gradually, as shown by the progress made in shortening the list of price-controlled items as well as by reducing the differential between the controlled and international prices. While there is little evidence, the limited supervision of the price controls indicates that those on basic consumer items may have been implemented only in the Federal District of Mexico, thus benefitting only people in that area.

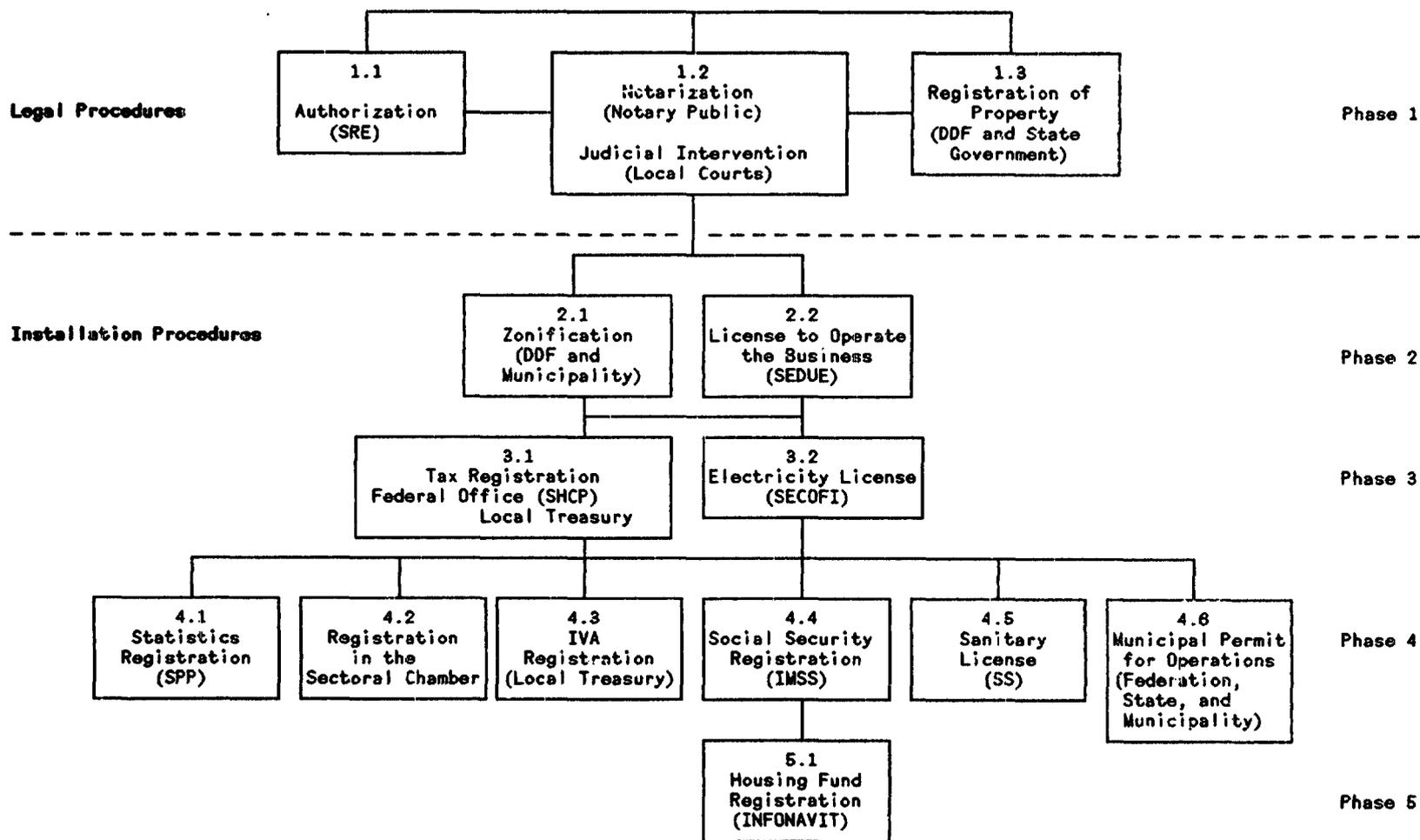
E. Bureaucratic Procedures

2.48 Administrative regulations are linked with the bureaucratic procedures governing business licenses and various economic regulations. In Mexico, these extensive and time-consuming procedures contribute significantly to the cost of doing business, and to some extent, they function as entry barriers. The evidence on their cost to firms is not conclusive because the transaction and opportunity costs are difficult to measure. However, simple and preliminary estimates suggest that opening and installing a business may take up to a year and a half, while the cost of coping with the procedures governing firm operations can in some cases account for about 3% of a large firm's operating expenses.

2.49 The bureaucratic procedures affecting industry may be classified in two categories: registration/installation of firms, and regulations on business operations. To register and install a firm involves 17 procedures, to be carried out in 5 phases, and 9 government agencies (see Figure 2.2). Many of the steps appear unnecessary (e.g., authorization from the Ministry of External Relations, chamber registration and sanitary licensing for all firms) and redundant (e.g., 3 steps involve taxation and 3 involve municipalities). The time required to set up a corporation is up to 240 days (an individual business requires 450 days), of which the legal procedures, or phase 1, can take up to 180 days. Firms cite notarization and judicial intervention by the local courts as one of the more difficult and expensive steps. One reason is that the number of authorized notaries public who receives a concession from the Government is small -- only about 160 for the entire Federal District of Mexico.

2.50 The administrative regulations covering business operations relate to taxation, social security and various industrial regulatory policies. Table 2.5 lists many of them and the estimated time each may take. The time

Figure 2.2: MEXICO - PROCEDURES TO INITIATE A BUSINESS^a



Source: SECOFI

a/ Institutions in parentheses:

SRE: Ministry of External Relations
 DDF: Federal District
 SEDUE: Ministry of Urban Development and Environment
 SS: Ministry of Health
 SPP: Ministry of Planning and Budgeting

SECOFI: Ministry of Commerce and Industrial Department
 SHCP: Ministry of Finance and Public Credit
 IMSS: Mexican Institute for Social Security
 INFONAVIT: Housing Fund for Workers

needed to obtain permits or authorizations has a wide range, being particularly lengthy when technical investigation is required. For example, approval of price lists, technology contracts and assistance, or entry into the registry of pharmaceutical producers may each take up to six months.

2.51 The major tax administration reforms prior to 1987 had a substantial impact on the time spent filing tax forms and returns (Table 2.5). The establishment of the Forum for National Consultation for Fiscal Simplification in 1987 led to simplification measures. Further, the norms procedures and information flows between federal fiscal authorities and lower level fiscal entities have been and are being improved.

2.52 The above discussion covers only a subset of the administrative regulations affecting industrial enterprises. Bureaucratic procedures result from practically every economic regulation. Later in this report, a few others are discussed, notably the procedures for hiring and firing workers, obtaining or providing trucking services, and providing telecommunications services.

F. Policy Recommendations and the Government's Program for 1989-93

2.53 This section presents this report's suggested directions for policy change. Many of these suggestions have been addressed already in some of the planned policy actions the Government announced in late 1989 and 1990, which are also highlighted below.

2.54 First, as indicated in the President's Report of the Industrial Sector Policy Loan (ISPL), the future strategy for industrial development should focus on phasing out the sectoral approach. Liberalization of trade and DFI already constitute a path that is more neutral across sectors. Future steps would include the following:⁸

- Phase-out of the protection and regulation of industries within industrial programs. This includes the phase-out of the remaining QRs in the automotive and microcomputer industries, in tandem with a program of reduction of regulations.
- Non-renewal of the pharmaceutical program, which expired at the end of 1988; well-designed health regulations may be required instead.
- Reduction of the subsidies on energy inputs.
- Elimination of the rather arbitrary case-by-case promotion of firms and industries.

⁸ Many of these measures are included in an adjustment program formulated by the Mexicans and supported by the ISPL.

Table 2.5: SELECTED REGULATORY REQUIREMENTS AND TIME REQUIRED TO OBTAIN THEM

	Institution a/	Time (Days)		Frequency
		Min.	Max.	
<u>Procedures Related to Taxes & Worker Security</u>				
Income tax payment	SHCP	1	1	Quarterly
Value-added tax payment	Treasury	1	1	Monthly
Labor income tax payment	SHCP	1	1	Monthly
Use of social security	IMSS	1	1	Variable
Payment of social security	IMSS	1	1	Monthly
Housing fund payment registration while under social security	INFONAVIT	6	15	Variable
Housing fund payment calculation	INFONAVIT	1	1	Bimonthly
Contribution to business charter	CAMARA	1	1	Annual
Training commission registration	STPS	5	60	Variable
<u>Licensing</u>				
Machine and equipment control	DDF	15	30	Once
Sanitary license	SS	30	60	Variable
Authorization to produce food and beverages	SS	45	120	Annual
Registration/authorization of labels on food and beverages	SS	20	60	Once
Registration of suppliers to the Government	SPP	10	30	Once
Authorization/registration of price lists	SECOFI	15	180	Variable
<u>Technology-Related Authorizations</u>				
Authorization/registration of Mexican norms, standards and seals	SECOFI	30	120	Annual
Registration of measuring and weighing instruments (calibration & metrology)	SECOFI	1	10	Annual
Registration of inventions, brands and patents	SECOFI	90	365	Once ^{b/}
Authorization/registration of contracts for technology Transfer	SECOFI	30	180	Once
Registration in the national registry of the pharmaceutical producers industry	SECOFI	20	270	Annual
Authorization for technological assistance	CONACYT	90	180	Variable

Source: SECOFI.

a/ For acronyms, see Figure 2.2.

b/ Brands have to be registered every three years.

Because these policy changes may result in significant changes in employment and exports, the phase-out may take a few years.

2.55 In late 1989 the Government announced specific steps that would gradually reduce import protection and regulations in industries covered by the industrial programs. In its new automotive decrees, imports of cars and trucks are gradually to be opened beginning in 1990 and with model year 1991. Terminal producers will be allowed to import new cars, with the value of their imports related to their surplus foreign exchange balance. The required foreign exchange balance for each unit of import will decline over time between model years 1991 and 1994. QRs on auto parts were removed. Truck imports will also be gradually liberalized. In terms of regulations, DCRs for automobiles and auto parts will be replaced by domestic value-added

requirements, which will be reduced over time based on a preannounced calendar. DCRs for auto parts were removed. Many regulations were eliminated, such as authorizations by SECOFI, restrictions on lines and models, compulsory components and production of eight cylinder engines, and authorizations for entry into terminal production.

2.56 For pharmaceutical, the Government has announced a program to make incentives more transparent and increase competition. Among the measures to be taken are a gradual elimination of the QRs on pharmaceutical imports between 1989 and 1993. Tariffs, ranging from 5% on raw materials to 20% on pharmaceutical products, will take the place of QRs. DCRs will also be eliminated during the same period. The Government plans to end the price controls of its purchases made through public bidding. Reform of the price controls is slower, although there are plans to liberalize a select group of pharmaceutical that are not classified as basic necessities. In microcomputers, the Government has reached an agreement with industrialists to remove the industry's QRs, DCRs and foreign exchange requirements between 1989 and 1992.

2.57 Second, the role of Government parastatals in manufacturing needs to be reduced, as the rationale behind the role of state enterprises in producing intermediate goods with large economies of scale is no longer valid at Mexico's current stage of development. Future steps are changes in the promotional and regulatory environment governing parastatals and eventual privatization. For example, in the case of the petrochemical industry, there is a need to open up basic petrochemicals to import competition, i.e., imports should not be limited to products not produced by PEMEX.⁹ Spinning off some other basic petrochemical products to an autonomous unit in PEMEX or to the private sector could also be considered. It is recognized that privatizing basic petrochemicals may not be possible in the medium term because of constitutional provisions. Some of the pricing rules have to be made more in line with world market conditions.¹⁰

2.58 Specific recommendations for other industries dominated by parastatals are difficult to give in the context of this report. The general thrust, however, is to reduce direct Government participation, particularly in heavy intermediate goods, and then to privatize. The Government has already been actively pursuing this goal. Increasing the efficiency of parastatals and "disincorporation" of government-owned companies are supported under the World Bank's Public Enterprise Reform Loan (PERL) to Mexico approved in June 1989. In 1989, the Government also privatized DINA, the state-owned truck manufacturing company. In 1990, it announced the privatization of SIDERMEX,

⁹ The Government allowed increased private sector entry by reducing the list of basic petrochemicals (which are limited to state ownership) in 1989. In August 1989 it also allowed foreign participation in some tertiary petrochemical products.

¹⁰ In 1990, the Government expects to start a major study to generate proposals to increase the competitiveness of the Mexican petrochemical industry. Pricing policies will be one of the major issues to be analyzed.

which produces steel, two major copper mining companies, and possibly some parts of FERTIMEX, the fertilizer company.

2.59 Alternative strategies will be needed to promote industrial growth because of informational and other market failures, which are likely to arise. A sound principle is to choose policy instruments that directly address the source of the market failure. The benefits of the policies should also be weighed against the administrative capacity of the Government to carry out the policies effectively. Some possible areas that may have to be addressed are obstacles to technological growth, inadequate funds for small- and medium-size firms and human capital development.

2.60 Finally, the administrative regulations need to be simplified and the time required shortened, for example, the procedures to register and install a firm. Many countries register firms only through a tax registry and/or a securities commission. Bureaucratic procedures affecting firm operations would also need to be simplified, perhaps through fewer steps or computerization, with the fundamental change dependent on how the economic regulations themselves are changed.

CHAPTER III

INDUSTRIAL CREDIT POLICIES

3.01 Mexico has used its banking system to channel funds to priority economic and social sectors, including industry. Within industry, the Government has also directed credit schemes to priority subsectors. Most of these schemes were put in place between 1940 and 1960. In that period, the Government wanted to assure an adequate supply of credit to the public sector, particularly the emerging parastatals. The aim was to defend national economic and social interests against the growing private sector industrial groups and, later in the seventies, against the increasing presence of multinational firms. Preferential credit to industry proliferated well into the mid-1980s and was, until very recently, deeply embedded in the Mexican system of financial regulation and industrial policy.

3.02 In late 1988, the Government introduced major changes in the commercial banking system to reduce the scope of directed credit; since 1989, the development banks have also been transformed in important ways. However, until the Salinas Administration took office on December 1988, the use of directed credit as a policy instrument and the role of commercial banks was an important issue in industrial policy making.

3.03 Possible justifications for this strategy included offsetting market failure or assisting certain groups through subsidies. Directed credit to manufacturing has been used mainly to encourage priority industries, which implicitly assumes market failure. However, in practice, the major part of this credit has gone to just a few firms and industries that have not necessarily been overall priorities of industrial policy.

3.04 This chapter describes industrial financing in the mid-eighties, focusing on the allocation of industrial credit across industries and firms (both state-owned and private). It first reviews briefly the rationale for selective financing in the industrial sector, followed by a look at the key mechanisms used to direct industrial credit. It then estimates roughly the subsidies provided through preferential credit to industry and describes the distribution of industrial credit lent by the development and commercial banks between 1985 and 1989.

A. Rationale for Preferential Industrial Credit

3.05 Preferential credit was used as part of a broader policy framework that called for administrative guidance to encourage certain activities. The Plan Nacional de Financiamiento de Desarrollo, 1983-88 (PRONAFIDE) stated that to achieve greater efficiency and resource utilization, the financial system needed to channel savings to the most productive activities. The Government then established guidelines and priorities to enable banks and other financial intermediaries to discriminate among credit applicants. The industrial sector was one of the priority areas, and, within it, some activities were given preferential access to credit.

3.06 Many of the preferential credit schemes disappeared with the deregulation of the commercial banking sector. What remains, preferential industrial credit included, is now administered through the development bank system. (The Government recently initiated reform of the development bank system and its preferential credit allocation; see paras.3.13-3.16 below). If it is decided that pursuing preferential credit as a policy instrument is desirable, the next question is whether channeling this credit through the development banks is the least-cost mechanism?

3.07 As noted, two reasons have been used to justify directed industrial credit -- market failure and the need to subsidize certain groups. The following description of the credit mechanisms and the resulting distribution of credit shows, however, that specific market failures have not been addressed effectively and that a few parastatals have benefitted to some extent. Moreover, current priorities do not justify continuing the subsidies. The role of the development banks also seems unclear, particularly given that they have favored mainly the public sector.¹

B. Key Mechanisms and Institutions for Industrial Credit

3.08 The previous administration established the procedures to implement PRONAFIDE. First, it determined the amount of credit expansion that was consistent with macroeconomic objectives. Second, it estimated the prospective budget deficit and associated public sector borrowing requirements and established targets for financing from domestic and external resources. Third, it determined which projects, activities and sectors warranted priority attention and therefore preferential access to (limited) credit. Finally, it identified the higher priority activities and applicants by establishing coordinated mechanisms to ensure that high priorities got access to funds.

3.09 The Government has used various mechanisms to direct preferential credit (a) Until late 1988, it imposed forced lending requirements (Cajones), under which commercial banks were obligated to maintain higher percentage deposits for some types of loans than for others. By late 1988, the Government had ended the forced lending, except for the 30% of its funds that have to be kept in Government financial instruments to ensure that market rates are paid. (b) Prior to the recent change, the Central Bank and the Ministry of Finance had set up a number of trust funds (Fideicomisos) to operate as second-tier mechanisms for lending to priority sectors. (c) The Government-owned development banks, which rival the commercial banks in size, issue selective credit directly. At one time, practically all the development banks also operated their own trust funds for specific priority sectors.

3.10 Some of the above mechanisms have played an important role in industrial sector financing, while others have been more relevant to other priority activities. Direct financing via the development banks and the various trust funds has been by far the most important vehicle for channeling credit to priority industrial activities and clients. The principal development bank for industry is Nacional Financiera (NAFIN), which dates back

¹ The Government is currently preparing an assessment of the role of the development banks and trust funds in Mexico's development strategy.

to the late 1930s. It has become not only the biggest development financing institution in the country, but it also has direct equity participation in a number of important industrial parastatal conglomerates, large mining companies and other businesses. Recently, NAFIN's internal organization has undergone important changes with the incorporation and partial elimination of the industrial trust funds. NAFIN now operates or has incorporated the functions of several trust funds for industrial development (FOGAIN, FONEI, FIDEIN and FONEP).

3.11 Another important development bank catering to the industrial sector is the Banco Nacional de Comercio Exterior (Bancomext), also established in the late 1930s. It promotes and finances export-oriented industrial activities. It also operated but recently closed a trust fund for export pre-shipment and post-shipment financing, the Fondo de Fomento de las Exportaciones Mexicanas (FOMEX). Figure 3.1 portrays the most important channels for industrial financing in Mexico's financial system.

3.12 Both the preferential credit schemes conducted through the development banks, as well as the rediscounting arrangements involving commercial bank credit, were traditionally available at different costs to different borrowers at the Government's discretion. Some schemes (particularly those administered by the Banco de Mexico) were intended to make credit available to targeted clients at the lending institution's cost of funds plus a margin to cover the costs of intermediation. Development banks, on the other hand, were designed not only to assure the availability of funds to preferred customers but also to provide credit at preferential interest rates that were frequently well below market-clearing levels.

3.13 Preferential credit has in practice been influenced by macroeconomic and political pressures. Higher Government borrowing requirements since the mid-1970s and reduced external borrowing since 1982 have led to a crowding out of private sector borrowing. The implicit principle underlying the allocation of the limited credit for industry has been largely that of discriminating against borrowers whose needs are considered less important as compared with those of the Government sector and some preferred productive activities and clients. The original objective of, say, channeling credit to emerging new industries has been obscured by the public sector's crowding out and the frequently less than arm's length relationship between beneficiaries and the financial institutions administering the preferential credit allocation. As a result, access to credit by economic agents that had not received credit through one of the preference mechanisms had virtually ceased in the late 1980s. Overall, it has been difficult to discern any governing guidelines or consistency in the implementation of the preferential credit policies.

3.14 Since late 1988, the Government has introduced important changes in Mexico's industrial credit policies. First, as noted, it abolished the commercial banks' forced lending schemes and replaced them with a 30% liquidity ratio that the banks have to maintain in high quality, Government financial instruments. This measure has freed up commercial banks' credit potential to the extent that lending to the private manufacturing sector grew by roughly 30% in real terms in 1989. The recently announced reprivatization of the Mexican commercial banks is expected to result in further improvements

in the allocation of credit to private sector users, with projects and activities that demonstrate the highest yields and profitability likely to obtain increasingly easier access to commercial bank financing.

3.15 Following the commercial bank reform, in 1989 the new administration began to restructure and modernize the development banking system. In part supported by a World Bank Financial Sector Adjustment Loan, the Government initiated a comprehensive modernization program for the development banks and trust funds. In the area of industrial financing, the main reforms affected NAFIN. The primary changes include the following: (a) starting in early 1990, NAFIN became a strictly second-tier institution, ceasing to compete with the commercial banks and instead cooperating with them in areas deemed worthy of Government support (for details see below); (b) NAFIN's main objectives from now on will be long- and medium-term financing of projects with higher relative risks (e.g., technology development) and support of micro-, small- and medium-scale industry; (c) virtually all credit subsidies will be eliminated; and (d) NAFIN's equity capital will be strengthened, among other means via the absorption of a number of fideicomisos. As a result of these changes, the allocation of NAFIN's credit is shifting from the parastatal sector to private industries.

3.16 Uncollectible loans by NAFIN to public enterprises were passed on to a Government trust fund (Fondo de Financiamiento del Sector Publico, FOFISEP), leading to a major improvement in NAFIN's finances; during 1989 and 1990, NAFIN also absorbed FONEI and FOGAIN, including their equity capital. The institution's reference interest rate was changed from the average cost of funds (CPP) index to the Government's treasury notes (CETE); with the exception of micro enterprises and National Solidarity Program (PRONASOL), all other lending is now given at rates equal to or higher than the CETE rate. As part of NAFIN's consolidation, its previous 29 lending programs were reduced to the following seven: industrial restructuring, industrial infrastructure, micro- and small industries, technology development, environmental protection and pollution control, pre-investment studies, and PRONASOL. NAFIN has also introduced a guarantee program for micro-, small- and medium-scale firm financing, strengthened its technical assistance and training programs, and begun to develop (through FOMIN) a venture capital financing program.

3.17 In sum, it appears that the objective of the development bank reform is to move away from subsidized credit and lending to Government-owned industries and toward activities with either certain market failures (technology development, risk capital, micro-enterprises) or need to subsidize (PRONASOL's financing of poor and depressed areas), at least in the short run. Some initial results in terms of development bank credit allocation are shown and commented upon in the sections below. Further reform and evolution of the sector will most likely depend on the role of the reprivatized commercial banks as well as on other financial intermediaries (e.g., brokerage houses, insurance companies, investment banks and venture capital firms). It can be expected that as Mexico's financial system deepens, the role of the Government development finance institutions will have to be redefined and will probably be reduced in relative terms.

C. The Subsidy in Preferential Credit Policies

3.18 The measurement of the subsidy in preferential credit policies is tentative and illustrative at best, mainly because it is difficult to define what is a credit subsidy and because adequate statistical data are not available. Despite these difficulties, the subsidy elements of the preferential credit scheme are estimated here in the context of the General Interest Rate Agreement (GIRA) between the Government of Mexico and the World Bank. The calculations indicate that, in the aggregate, the subsidies averaged 3.5% of GDP during the six-year period 1982-87, compared with 1.1% of GDP during 1988-89. The subsidies were directed primarily at the agricultural, industrial and housing/urban sectors of the economy, with approximately 70% of the total going to public sector entities (Table 3.1).

3.19 During 1985 to 1987, an average of 37.6% of total bank lending to manufacturing came from the development banks, indicative of the importance of the preferential credit policies to the sector (Annex Table A3.1). At the end of 1989, after the initiation of the reform of commercial and development banking, the figure still stands at 19%. Credit concentration is also an issue: of the 45 subsectors of the manufacturing sector, five -- sugar, pulp and paper, fertilizers, iron and steel, and automobiles -- accounted for about 45% of total credit to manufacturing and more than 80% of development bank lending (Table 3.2). In stark contrast to their high participation in credit, the five subsectors combined accounted for only about 15-16% of manufacturing sector GDP in the mid-1980s.

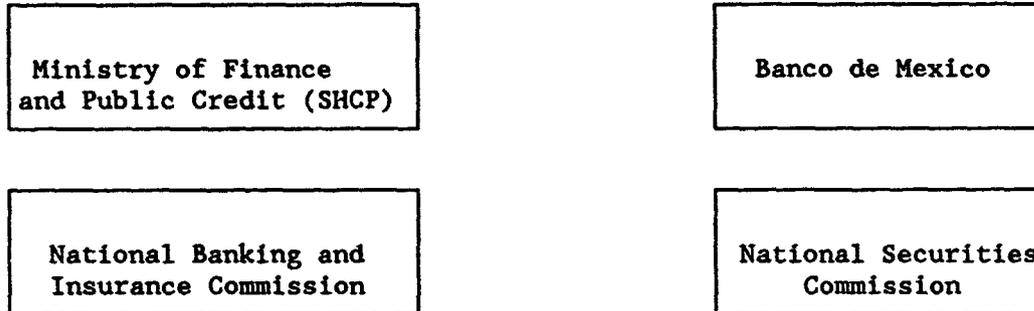
3.20 During the late 1970s, the subsidy element of credit to the manufacturing sector did not exceed 1% of the sector's GDP on average. During 1982-83, however, given the high levels of inflation and little adjustment in preferential nominal interest rates, the credit subsidies amounted on average to 11.65% of manufacturing sector GDP. While the relative extent of credit subsidies came down significantly in subsequent years, the subsidies as a share of the sector's output were still significant (2.2% of GDP on average between 1984 and 1989), although they were below 1% at the end of this period.

3.21 It should be pointed out that the methodology applied in Table 3.1 did not cover possible bad debts and/or the rolling over of development bank and trust fund lending. Again, while no reliable data on the soundness of these institutions' loan portfolios are available, it is likely that an important portion of development bank loans may ultimately have to be written off as uncollectible.² This eventuality may increase the extent of the subsidy given via preferential credit schemes even more and make access to credit even harder for other applicants.

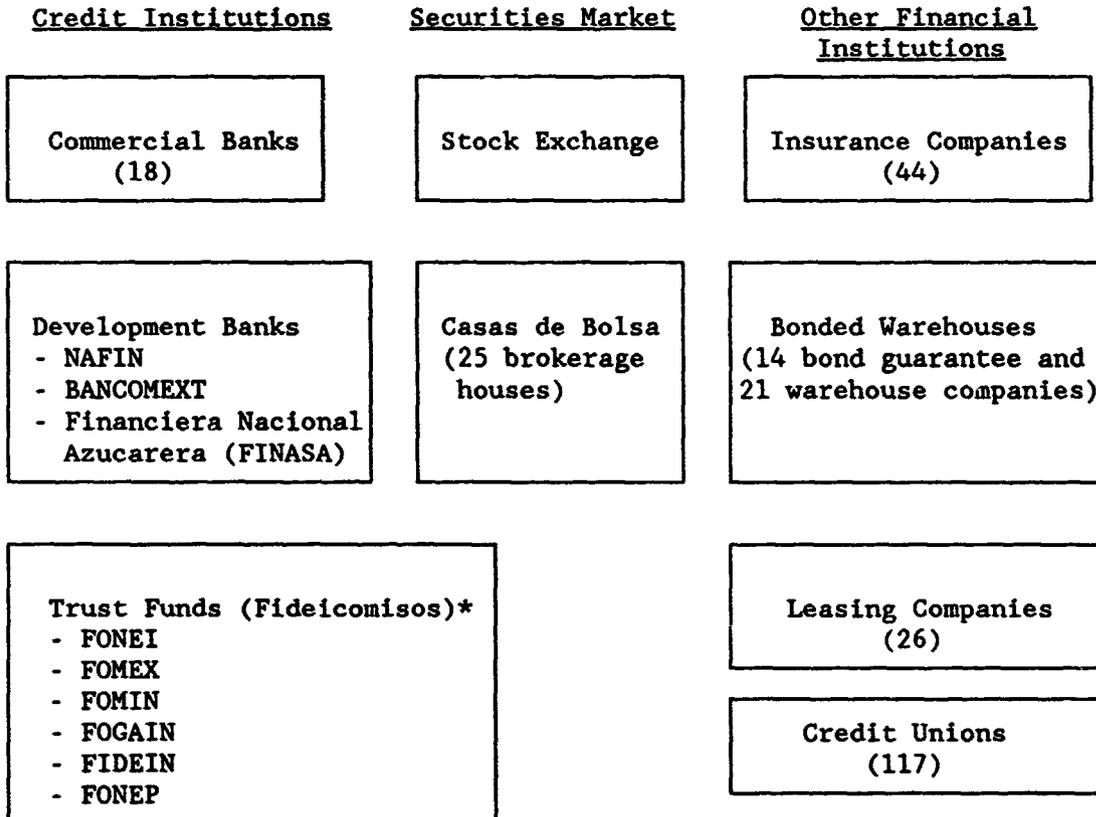
² NAFIN reports that as part of its financial restructuring program, the Government assumed close to US\$ 1 billion equivalent of lead loans in 1989.

Figure 3.1: FINANCIAL SYSTEM

REGULATORY ENTITIES



FINANCIAL SERVICES FOR INDUSTRY



Source: Banco de Mexico.

* These were absorbed by NAFIN during 1989/90 except for FOMEX which became joint of Bancomex.

**Table 3.1: ESTIMATED SUBSIDIES IN PREFERENTIAL CREDIT OPERATIONS
OF DEVELOPMENT BANKS AND TRUST FUNDS ^{a/}
(% OF GDP)**

	1982	1983	1984	1985	1986	1987	1988	1989
Total estimated subsidies	5.4	6.6	2.0	2.1	3.2	1.8	1.4	0.7
Of which reflected in direct transfers by Govt. to dev. banks and Trust Funds	1.7	1.6	1.0	0.8	1.1	0.4	0.3	0.1
Recipients by sector								
Agriculture (incl. sugar and fishing)	1.1	1.3	1.2	1.3	1.7	1.0	0.4	0.3
Industry (as a % of manuf. GDP)	2.1 10.0	2.8 13.3	0.4 1.9	0.4 1.9	0.6 2.8	0.5 2.3	0.8 3.6	0.2 0.9
Housing and urban dev.	1.9	2.2	0.4	0.3	0.6	0.1	0.1	0.1
Trade, consumption, tourism, etc.	0.3	0.3	0.1	0.1	0.3	0.2	0.1	0.1

Source: Direccion General de Planeacion Hacendaria, SHCP and Bank staff estimates.

a/ Preliminary estimates, subject to revision. The credit subsidy was calculated as the difference between the rate charged on development bank credit and the prevailing market-based peso lending rate in Mexico (on average 20 percentage points above the average cost of funds [ACF] during the period of observation). A similar analysis, recently published by Banamex, takes ACF as the reference market rate and reports the following results of credit subsidies as a percentage of GDP:

	1982	1983	1984	1985	1986	1987	1988	1989
Total	0.62	0.63	0.45	0.48	0.51	0.22	0.17	0.08
Agriculture	0.45	0.47	0.60	0.68	0.56	0.33	0.14	0.10
Industry	-0.66	-0.34	0.05	-0.02	-0.13	-0.16	-0.08	-0.10
Housing and Urban Dev.	0.48	0.48	0.00	0.02	0.06	-0.01	0.06	0.06
Trade	0.13	0.07	0.00	0.01	0.01	0.06	0.05	0.03

Source:

Subsidios de la Banca de Desarrollo,
Examen de la Situacion Economica, Banamex, April 1990.

D. Distribution of Credit to Industry

3.22 Based on the policies to channel credit to priority activities, what has been the distribution of credit among subsectors and groups of enterprises? How important has the development banking system (development banks and trust funds for industrial lending) become? How, if at all, were the implicit distortionary effects of forced lending by the commercial banks and direct Government intervention via the development banks and fideicomisos reflected in the composition and structure of recipients?

3.23 Since the early 1970s, the industrial sector (including manufacturing, petroleum and electricity) has received between 40-50% of total banking system credit. Its share was particularly high in the first half of the 1970s -- 48% of the total -- then fell to about 42% in the late 1970s and early 1980s as a result of the boom in the services sector, and has been approximately 45% since the mid-1980s. More important, perhaps, credit to the sector grew in real terms throughout the previous decade at 6.2% p.a., while since the early 1980s, particularly after 1982, it has been shrinking in real terms -- 2.0% p.a. during 1980-85 -- despite growth in manufacturing output of 1.4% p.a. on average in the same period.

Table 3.2: CREDIT ALLOCATION TO THE MANUFACTURING SECTOR --
SOME INDICATORS
(percentage shares)

Subsector	<u>Total Credit</u>			<u>Development Banks</u>			<u>Manuf. GDP</u> ^{a/}		<u>CR4</u> ^{b/}
	1985	1986	1987	1985	1986	1987	1985	1986	1985
Sugar	4.34	3.57	2.70	10.62	8.40	6.95	5.77	5.89	51.71
Paper	4.47	5.55	4.11	6.64	9.04	6.01	1.66	1.57	50.89
Fertilizers	6.57	9.42	9.89	10.73	15.32	20.25	0.15	0.15	59.10
Steel	18.61	15.61	17.00	33.06	26.69	25.70	4.45	4.17	78.70
Automobiles	10.99	13.02	12.81	17.80	23.08	25.85	3.97	3.37	83.90
Subtotal	44.98	47.17	46.51	78.85	82.53	84.76	16.00	15.15	Avg.53.14
Other									
Subsectors	55.02	52.83	53.49	21.15	17.47	15.24	84.00	84.85	

Source: INEGI, Tables 5 and 23.

a/ Manuf. GDP = Subsectors' share in total manufacturing GDP.

b/ CR4 = Four-plant concentration ratios

3.24 A closer look at the five subsectors reveals that they are either producers of some key agricultural (fertilizer) and industrial (sugar, pulp and paper, and steel) inputs or of durable capital goods (automobiles). With the exception of sugar and paper, they have above average ratios of industrial concentration, and without exception they are characterized by a high degree of direct state participation in the form of parastatals. All five subsectors

have either been part of a special Government-sponsored development program (sugar, paper, steel and automobiles) or have had a special relationship with the state (fertilizers are wholly state-owned).

3.25 A more detailed analysis of development bank credit to the five subsectors (Table 3.3) shows that the preferential credit schemes have been highly concentrated in a few areas, usually with strong parastatal participation. In the 1985-87 period, 85% of all preferential credit from the development banks went to parastatals. The three biggest manufacturing ones - - Fertimex (fertilizer), Sidermex (steel) and Dina (trucks and buses) -- alone obtained about 48% of all development bank lending. Of the 10 biggest borrowers from the development bank sector (which includes the trust funds) at the end of 1987, the first eight were parastatals (three from the steel/steel products sectors, two from fertilizers and pulp and paper, and one from the automotive sector). At the end of 1987, these 10 firms accounted for 70% of the lending portfolio of the development banking sector as a whole (Table 3.4).

Table 3.3: DEVELOPMENT BANK CREDIT TO SELECTED MANUFACTURING SUBSECTORS
(year-end balances in millions of current Mexican pesos)

Subsectors	1985		1986		1987		1988		1989	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
1. Sugar	112,052	10.62	172,461	8.40	301,363	6.95	419,946	11.8	1,019,653	10.5
Private	16,572	1.57	19,434	0.95	49,712	1.15	180,023	5.0	526,439	9.5
Public	95,480	9.05	153,027	7.45	251,651	5.80	239,423	6.8	493,214	8.9
2. Paper	70,091	6.64	185,594	9.04	260,885	6.01	326,349	9.1	442,093	8.0
Private	3,924	0.37	9,523	0.46	47,163	1.08	60,537	1.6	196,706	3.5
Public	66,167	6.27	176,071	8.58	213,722	4.93	265,812	7.4	245,387	4.4
3. Fertilizers	113,273	10.73	314,447	15.32	878,472	20.25	525,314	14.7	421,220	7.6
Private	-	-	-	-	-	-	-	-	-	-
Public	113,273	10.73	314,447	15.32	878,472	20.25	525,314	14.7	421,220	7.6
(Fertimex)	113,207	10.73	221,842	10.81	667,528	15.38	525,314	14.7	(421,220)	7.6
4. Steel	384,905	38.47	547,970	26.69	1,115,129	25.70	1,428,125	40.0	1,741,771	31.6
Private	81,425	7.72	15,867	0.77	10,519	0.24	382,162	10.7	228,789	4.6
Public	303,480	28.75	532,103	25.92	1,104,604	25.46	1,045,463	19.3	1,512,982	27.4
(Sidermex)	262,679	24.89	351,004	17.40	436,535	10.06	(330,682)	9.2	(443,647)	8.0
5. Automobiles	187,887	17.80	473,693	23.08	1,121,765	25.85	55,549	1.5	59,600	1.0
Private	3,816	0.36	3,850	0.19	-	-	55,549	1.5	59,660	1.0
Public	184,071	17.44	469,843	22.89	1,121,765	25.85	-	-	-	-
(Dina)	137,193	13.00	416,100	20.27	973,399	22.43	-	-	-	-
6. Other Sectors	187,052	17.73	358,550	17.47	661,465	15.24	811,995	22.7	1,820,439	33.0
Private	50,904	4.82	266,617	12.99	478,632	11.03	601,184	16.8	1,355,694	24.6
Public	136,148	12.91	91,933	4.48	182,833	4.21	210,811	5.9	464,245	8.4
TOTAL	1,055,260	100.00	2,052,715	100.00	4,339,079	100.00	3,567,278	100.0	5,504,836	100.0
Of which:										
Five subsectors (1-5)	868,208	82.27	1,694,165	82.53	3,677,614	84.76	2,755,287	77.2	3,684,397	66.9
Private sector	156,641	14.82	315,291	15.47	586,026	13.44	1,223,906	34.3	2,367,288	43.0
Public sector (3 FEs ^{a/})	898,619	85.16	1,737,424	84.64	3,753,053	86.49	2,343,372	65.7	3,137,568	57.0
	513,079	48.62	988,946	48.18	2,077,462	47.88	855,966	23.8	864,867	15.7

Source: Banco de Mexico; Bank staff estimates.
a/ FERTIMEX, SIDERMEX and DINA.

3.26 The changes in industrial credit policies introduced since late 1988 have changed the above situation to some extent. Since 1988, the share of private sector firms in total development bank credit has increased substantially: at the end of 1989, 43% of all credit went to the private sector, compared with only 13% two years earlier (this increase can, to a certain extent, be attributed to the fact that a considerable portion of the uncollectible loan portfolio involving the parastatals has been taken off the development bank balance sheets). The five subsectors mentioned above (sugar, pulp and paper, steel, fertilizers and automotive) still account for more than two-thirds of the total portfolio of the development banks (as opposed to almost 85% in 1987). With the privatization of Dina and the restructuring of its debt, the two largest PEs (Sidermex and Fertimex) represented less than 16% of the total (25% in 1987, see Table 3.3.). Some, albeit minor, change can be seen when the top ten borrowers from the development banks are compared: in 1987, they included eight PEs, in 1989 only six; steel, pulp and paper, and fertilizers were still the predominant sectors by far as in 1987.

3.27 As noted, the commercial banks participate in the Government's preferential credit schemes via forced lending restrictions. Commercial bank loans to their 10 largest customers accounted for over 22% of their lending to manufacturing at the end of 1987, a level that indicates less concentration than at the development banks (Table 3.4). In the period under observation (1985-87), about one-fifth to one-quarter of total commercial bank lending in the manufacturing sector went to parastatals. Two -- Fertimex and Sidermex -- are among the top 10 borrowers from the commercial banking system. Some of the private firms -- Tamsa and Alfa -- are also known for their close relationship with the Government. It is also notable that the industries of the ten largest clients are similar to those favored by the development banks, namely, fertilizers, steel and steel products, and the automotive industry.

3.28 With the relative reduction of development bank lending in total industrial financing in the past couple of years, commercial banks have assumed a more important role in lending to industry: at the end of 1989, over 70% of all loans to the manufacturing sector were from commercial banks, compared with roughly 50% two years earlier. The concentration of commercial bank credit increased: the top ten clients accounted for almost 28% of their total manufacturing portfolio in 1989 (22.5% in 1987). In 1989, Fertimex, the Government-owned fertilizer conglomerate, became the commercial banks' largest borrower.

3.29 There is some evidence that the fideicomisos also tend to lend largely to medium-size and large firms. For example, a recent World Bank Project Completion Report (PCR) suggests that FONEI, a trust fund whose objective was to provide long-term financing and more risky investments that the formal financial system presumably would not finance, may actually have acted to a significant extent as a mere substitute for other types of investment financing. It has provided traditional lending to well-established firms. Its client firms, many of which are in Mexico's top 500, employ on average 250 employees and are mainly producers of chemical and metal products.

Table 3.4: TEN LARGEST MANUFACTURING BORROWERS IN 1987 AND 1989
(year-end balances in current Mexican pesos)

Enterprise	Industry	Ownership	Amount	Share in %
1987				
<u>Development Banks</u>				
1. Dina	Automotive	State	977,399	31.85
2. Fertimex	Fertilizers	State	667,528	21.84
3. Sidermex	Steel	State	436,535	14.28
4. NKS	Steel	State	343,126	11.23
5. FMT	Steel tubes	State	164,466	5.38
6. Fertica	Fertilizers	State	142,764	4.67
7. Pr. Nac. de Papel	Paper	State	113,659	3.72
8. Pipsa	Paper	State	100,007	3.27
9. Tamsa	Steel pipes	Private	59,700	1.95
10. Citicom de Mexico	Metal struct.	Private	55,080	1.80
Subtotal			3,056,267	100.00
Top 10 as a % of total development bank credit to manufacturing				70.44
Top 10 as a % of total banking system credit to manufacturing				23.31
<u>Commercial banks</u>				
1. Alfa	Steel	Private	452,307	22.90
2. Fertimex	Fertilizers	State	401,488	20.33
3. Sidermex	Steel	State	206,653	10.46
4. Ind. Unidas	Auto parts	Private	161,534	8.16
5. Tamsa	Steel pipes	Private	148,167	7.50
6. Cementos Tolteca	Cement	Private	148,107	7.50
7. Nissan	Automobiles	Private	144,325	7.31
8. Volkswagen	Automobiles	Private	121,020	6.13
9. Cementos Anahuac	Cement	Private	96,622	4.89
10. Cerveceria Moctezuma	Beer	Private	94,633	4.79
Subtotal			1,974,856	100.00
10 largest as a % of total commercial bank credit to manufacturing				22.51
10 largest as a % of total banking system credit to manufacturing				15.06
1989				
<u>Development Banks</u>				
1. Sidermex	Steel	State	1,070,660	30.9
2. NKS	Steel products	State	626,813	18.1
3. FMT	Steel pipes	State	433,863	12.5
4. Fertimex	Fertilizers	State	421,220	12.2
5. Tamsa	Steel pipes	Private	256,256	7.3
6. Tabacos Mexicanos	Tobacco products	Private	152,447	5.6
7. Cia. Ind. Atechnique	Pulp and paper	Private	146,914	6.2
8. Pipsa	Paper	State	131,657	3.8
9. Prod. Nal. de Papel	Paper	State	113,766	3.3
10. Meximox	Steel products	Private	118,651	3.2
Subtotal			3,462,037	100.0
Top 10 as a % of total development bank credit to manufacturing				62.9
Top 10 as a % of total banking system credit to manufacturing				18.2
<u>Commercial banks</u>				
1. Fertimex	Fertilizers	State	831,035	22.1
2. Cementos Mexicanos	Cement	Private	739,369	19.7
3. Volkswagen	Automotive	Private	422,573	11.2
4. Nissan	Automotive	Private	408,086	10.8
5. Tamsa	Steel pipes	Private	360,122	9.6
6. Sidermex	Steel	State	279,356	7.4
7. Cementos Tolteca	Cement	Private	190,485	5.1
8. Tereftalatos	Chemicals	Private	189,749	5.0
9. General Motors	Automotive	Private	172,980	4.6
10. Meximox	Steel products	Private	165,980	4.4
Subtotal			3,759,731	100.0
10 largest as a % of total commercial bank credit to manufacturing				27.9
10 largest as a % of total banking system credit to manufacturing				19.8

Source: Banco de Mexico data, elaborated on by Bank staff.

E. Conclusions

3.30 Preferential credit allocation to the industrial sector was a long-standing tradition in Mexico. A number of instruments, arrangements and institutions emerged to channel a very important portion (up to 40%) of the overall financial system's resources to industrial sector users. However, a review of the recipients revealed that while credit was supposed to be distributed more toward all priority sector, only a few sectors and firms benefited from it. Many of the financial institutions and mechanisms used seemed to have developed haphazardly, often with little or no coordination with existing schemes. This situation in all likelihood increased the social and economic cost of development bank intermediation in Mexico.

3.31 While no clear objectives for preferential lending and concomitant eligibility criteria appear to have existed in most of the selective credit arrangements, the practice of channeling loans at preferential terms has created strong vested interests on the part of recipients. The sectors that appear to have benefited the most from development bank lending are the ones with firms that have majority state ownership, particularly a handful of large parastatals. The principal beneficiaries are found in a few industries (e.g., sugar, steel, paper and fertilizers) considered of strategic importance for the country's industrialization. Within those sectors, preferential loans seem to have gone disproportionately to parastatals. Overall, almost one-half of the preferential credit of the development banks and 20-25% of commercial bank loans appear to have gone to public sector firms in the mid-1980s.

3.32 The financial crisis of the early 1980s dramatically reduced the availability of loan funds during this period, which made the preferential credit schemes an even more important tool of industrial promotion than was the case before. This change can be demonstrated by the estimates of the credit subsidy as a proportion of manufacturing sector GDP. In some years in the early 1980s, the subsidy given to a few priority industrial clients reached over 10% of the sector's output. This situation has undoubtedly contributed to the borrowers' (largely parastatals) increased market power, enabled them to operate despite low levels of efficiency, and crowded out other, potentially more profitable investments, operations and firms.

3.33 The recent macroeconomic adjustment measures have tended to restrict direct budgetary transfers to the development banking system. In late 1988, the Government also phased out the forced lending by commercial banks and reduced the interest rate subsidies. It is consolidating and merging the trust funds catering to the industrial sector and modifying the lending procedures and criteria of the development bank sector. In 1989 the Government introduced a new transfer of funds and budgeting system for development banks and trust funds.

3.34 The recent changes in Mexico's banking system, commercial bank reprivatization, the withdrawal of development banks from first-tier lending and the seeming end to the generous financing of the parastatal sector, all of which were described in detail above, appear to be welcome steps in the right direction. However, as the country moves toward a more stable macroeconomic environment, with continued tight fiscal policies, there is a danger that some

of the remaining large parastatals may put undue pressure on the commercial banks to lend to them, particularly before the expected change in ownership of the banks, whose boards are still dominated by Government representatives. Recent anecdotal evidence shows, for instance, that Sidermex and Fertimex have been obtaining short-term borrowing financing from commercial banks in part because of the need for liquidity as a result of controlled prices under the macro stabilization program (Pacto) and partly because of their limited access to development bank financing.

3.35 Policymakers will have to pay special attention to the danger that such borrowing may again crowd out the private sector. They will also need to take care that the potential distress borrowing by some large parastatals does not jeopardize the commercial banks' solvency and/or become a disguised fiscal problem that ultimately the owners need to bail out. To minimize the risk of this happening, adequate prudential regulations will be required to monitor the health of the commercial banks. The "budget constraint" under which the remaining public enterprises will operate will have to be tightened, and the Government's monitoring and control systems will have to be improved. As regards the development banks, their future evolution will have to be monitored closely and their role reexamined in light of the expected developments in the financial system in Mexico. Finally, the mechanisms for the targeted credit for activities characterized by market failure and considered to require financial subsidies will also have to be thoroughly and critically reexamined.

3.36 A more detailed study of the objectives and priorities of the directed credit scheme and how it functions, the nature of the relationship among the Government, financial institutions and borrowing firms (particularly parastatals), the actual cost of borrowing and the health of the banking system's portfolio (especially the development banks') is required for a more definitive assessment of Mexican industrial financing policies. The information presented here suggests some preliminary conclusions that are important to understanding Mexico's industrial credit markets and to identifying a possible agenda for industrial policy reform.

CHAPTER IV

TAX POLICIES AND INVESTMENT INCENTIVES

4.01 This chapter analyzes the nature of Mexico's income tax policies and their effects on investment decisions and on the international competitiveness of the Mexican economy in attracting direct foreign investment. The analysis proceeds as follows. The changing nature of the Mexican income tax system as it applies to corporations is reviewed first, after which marginal effective tax rates for the current version of the system and the possible effects on these rates of investment incentives are estimated. Next the effective tax rates of the current version of the Mexican tax system are compared with those of the possible suppliers of direct foreign investment, the aim being to ascertain the international competitiveness of the Mexican tax system.

4.02 In performing the analysis, extensive use was made of calculations of marginal and average tax rates. Although this method has limited scope in determining the economic effects of the tax system on investment, it provides approximate magnitudes of the distortions the tax system provokes under various assumptions of financing sources and inflation rates. It is also appropriate given the high variability in Mexico's rate of inflation and the continuous changes in the tax system in the present decade.

A. Tax Policies

4.03 The surge in inflation to unprecedented levels from the late 1970s until the end of 1986 led to continual piecemeal revisions in the Mexican tax system. The pre-December 1986 reforms sought to index taxes to inflation (especially the corporate income tax [CIT]). These attempts resulted in a partial indexation of income taxes that favored mainly taxpayers while sacrificing Government revenues and distorting investment and financing decisions.

4.04 Pre-December 1986 System. The pre-December 1986 income tax system had the following characteristics (see also Table 4.1):

- (a) The statutory rate for the CIT was 42%;¹

¹ There are several sectors, which include among others agriculture and transport, that are excluded from the income tax and are taxed at lower at lower rates, so called special tax bases (STB, or bases especiales de tributacion.) Beginning 1990 the transport sector has been excluded from STB, and is now subject to the general corporate personal income tax, as applicable.

- (b) Depreciation was deductible and could be indexed to inflation in direct proportion to the net financial asset position of the firm;

Table 4.1: TAX SYSTEM RELATED TO INVESTMENT INCOME

Tax	Pre-December 1986 System	1987-88 System	1989 System
<u>Corporate income</u>			
Rate	42%	35%	37%-35% ^{a/}
Depreciation deduction	Yes	Yes	Yes
Indexation	Conditioned ^{b/}	Full	Full
Interest and foreign exchange loss deductions	Nominal	Real	Real
Capital gains taxation	Yes	Yes	Yes
Rate	42%	35%	35%
Indexation	Yes ^{c/}	Yes	Yes
Inventories indexation	Yes	Yes (full)	Yes (full)
Operational loss deduction	Yes	Yes	Yes
Carry backward	1 yr	0	0
Carry forward	4 yrs	5 yrs	5 yrs
Indexation	No	Full	Full
Dividends, deductible	Yes	Yes	No
<u>Assets</u>	No	No	2% ^{d/}
<u>Personal income</u>			
Dividends, rate	55% ^{e/}	50% ^{e/}	10% ^{e/f/}
Interest income, rate	21% ^{g/}	21% ^{g/}	21% ^{g/}
Capital gains	Yes ^{h/}	Yes ^{h/}	Yes ^{h/}
Other income	55%	50% ^{i/}	40%

Source: SHCP.

- a/ In 1989 the rate will be 37%, in 1990 36% and from 1991 on, 35%.
b/ Depreciation could be indexed in direct proportion to an enterprise's net financial assets' position.
c/ Gains from mergers, reductions and liquidations were not indexed.
d/ This tax may be credited against the CIT.
e/ The same rate applies to dividend remittances from foreign subsidiaries by applying a definitive withholding tax at the source.
f/ Dividends from net current profits are taxed at 10%, dividends from other sources at 40%.
g/ 21% applies to the interest income flow arising from the first 12 percentage points on deposits; additional income flow is exempted.
h/ Capital gains realized through sales on the Mexican stock exchange are exempted.
i/ In 1987, the personal income tax on other income was 55%.

- (c) Inventories could be partially indexed by choosing the appropriate valuation method (LIFO was among the alternatives);
- (d) Operational losses could be carried forward but not indexed;
- (e) Nominal interest and nominal foreign exchange gains were deductible as operating expenses;
- (f) Capital gains from liquidations were not indexed;
- (g) The personal income tax rate was 55%, while interest income to individuals was taxed at 21%, and only with respect to the income flow generated by the first 12% of interest income received; and

- (h) Taxpayers made provisional payments quarterly based on past nominal payments, a practice that resulted in increasing losses of revenues to the Government as inflation accelerated.

4.05 The pre-December 1986 income tax system, by fully indexing only inventories, conditionally indexing depreciation, not indexing losses and capital gains from liquidations, and asymmetrically taxing/permitting the deduction of nominal interest income at the corporate and personal levels, generated the following distortions in an inflationary environment:

- (a) The conditioned indexation of depreciation biased investment against depreciable assets, because in the context of growing inflation, an increase in net indebtedness resulted in a negative net financial asset position at corporations, which therefore could not index their depreciation to inflation.
- (b) The non-indexation of operating losses (to be carried forward) discriminated against investment projects with long gestation periods and uneven cash flows.
- (c) The non-indexation of gains arising from liquidations or reductions in capital stock imposed a significant barrier to capital mobility, at a time when mobility was particularly important as it was in the then period of significant resource reallocation;
- (d) The asymmetry in the deduction/taxation of interest income at the corporate/personal level promoted debt financing at the corporate level in direct proportion to the rise in the rate of inflation.

4.06 The overall effect of this system was to reduce the CIT burden from 2.9% of GDP in 1980 to 1.5% in 1986 and to increase the net indebtedness of corporations, which up to 1986 averaged over 10% of GDP. Specifically, the "Tanzi effect" (i.e., the loss in Government revenues because of the lag in collecting taxes in periods of inflation) had a very strong effect on CIT revenues: in 1986 and 1987, the losses attributable to the lag in payments of taxes accrued and to the non-indexing of provisional payments were 26% and 42% of CIT revenues, respectively.

4.07 December 1986 Reform. The focus of the December 1986 reforms was the CIT. Building on the old system, the reform established a comprehensive approach to full indexation for inflation at the corporate level. The main features of the new system are as follows (see also Table 4.1):

- (a) Indexation of interest payments and foreign exchange losses. A major feature of the tax reform is that business taxpayers cannot deduct the inflationary component of interest payments and foreign exchange losses for income tax purposes. Under the new regime, each taxpayer (in the case of business-related transactions) computes the reduction in the real value of the nominal liabilities by multiplying the balance at the beginning of

each month by the increase for that month in the national consumer price index. Only the amount of interest paid in excess of this amount is deductible.²

- (b) Indexation of depreciation allowances. A second set of changes simplified and extended the indexation of depreciation allowances to all investments, independently of the financial asset position of the firm. Indexation of depreciation allowances in a high-inflation economy protects the after-tax return on capital from inflation and thus preserves the incentive to invest. With the introduction of a system of direct indexation of depreciation under the latest reforms, taxpayers now adjust the original value of each real investment annually to take into account the inflation of the previous year. The annual deduction for depreciation is then computed on the basis of the updated asset values. The depreciation schedules that were in use before the reform apply, but on an annually revalued base.
- (c) Full expensing of the present value of depreciation. As an alternative to the indexation of depreciation, the present value of depreciation may be deducted immediately. The discount factor for calculating present value is 7.5% real, which is below the real cost of funds to Mexican corporations. This rate is therefore equivalent to a subsidized loan proportional to the investment in depreciable assets. On the other hand, this incentive, which is a variant of the full expensing case, is not accompanied by a restriction on interest deductions. In contrast, the typical full expensing proposal would be, assuming the aim of the system were to minimize distortions by minimizing the variance in the marginal tax rates across different financial mixes and compositions of assets. This incentive, however, has never been used in practice because, in the transition period between the old and the reformed tax system, it could only be applied in the same proportion as the application of the new system, i.e., 20% in 1987 and 40% in 1988. These percentages, combined with the non-indexed depreciation of assets under the old system, which stopped at the end of the transition period, gave a net present value of depreciation that was lower than the alternative of a gradual increase in the indexed depreciation of assets over the life of the asset.³
- (d) Indexation of inventories. When businesses are not allowed to deduct from their income tax base the full replacement cost of

² Interest receipts are treated similarly. That is, taxpayers determine the real portion of interest receipts by the method described above and declare only this amount on their tax returns.

³ This option replaced a separate investment incentive that had been available in 1984, 1985 and 1986.

inventories used, they can be overtaxed because their economic costs are understated for tax purposes. Until 1987, Mexico followed international practice by allowing the use of the LIFO method of accounting for inventory. Because of its complexity, however, not all taxpayers took advantage of it. The reformed tax law is simpler in that it provides for the deduction of the current value of all purchases (other than fixed investments, as discussed above) in the year in which they are made. This approach effectively treats inventories as a current cost, much like purchases of labor or intermediate goods.

- (e) Reduction of the corporate tax rate. The CIT was reduced from 42% to 35% following the trend in tax reform in the US and Canada, where CIT rates had been lowered to 34% and 28%, respectively. Because Mexico is a small country, i.e., a price-taker in the international capital market, it had to adopt this reform, as the optimal tax policy for attracting new foreign investment is to have a tax rate comparable with that in the home country.
- (f) Transition to the new income tax system. Immediate introduction of the revised income tax provisions, particularly that disallowing the deduction of nominal interest, would have increased the taxable income of heavily indebted taxpayers sharply. For this reason, the Government planned to introduce the new structure over four years. During the transition, business taxpayers were to compute their tax under both the old and the revised systems and pay the weighted average of the liabilities computed under both systems. In this calculation, the weight attached to the liability under the new system was 20% for the tax year 1987 and was to rise by 20 percentage points every year until 1991, when the new system would be fully in place. The four-year phase-in is to affect all aspects of the reform, including the reduction of the corporate tax rate to 35%.
- (g) Elimination of the Tanzi effect. To eliminate the Tanzi effect, the reform changed the provisional payments from quarterly to monthly and in 1987 indexed them to actual inflation. In 1988, additional adjustments on tax payments were made on a biannual basis.

4.08 The main short-run results of the income tax reform and of the drastic drop in the rate of inflation have been a significant rise in revenues from the CIT and a significant fall in the level of the net indebtedness of the corporate sector. CIT revenues were expected to reach 2.9% of GDP in 1988 as compared with 1.5% in 1985, and in 1987 the net indebtedness of corporations declined to only 2.1% of GDP from over 10% of GDP in previous years.

4.09 December 31, 1988 Changes. Significant changes were made on December 31, 1988 to increase the international competitiveness of the tax

system, reduce the incentives for investment and simplify tax administration. The most important changes were the following (Table 4.1):

- (a) The transition from the old to the new tax system was advanced two years. That is, the new system was to be in full operation beginning in 1989 and the old system completely phased out except for the CIT rate, which will be reduced gradually from 37% in 1989 to 36% in 1990 and 35% in 1991. This change will reduce substantially the administrative burden of the tax system and will bring a fully indexed system into operation immediately.
- (b) The maximum personal income tax (PIT) rate was reduced from 50% to 40%. The corresponding rate on remittances to foreigners was also reduced to 40%. The PIT rate on dividends for residents as well as on remittances to foreign stockholders was reduced to 10% when the source of the dividends is current after-tax profits; the rate is 40% for dividends from other sources.
- (c) The system of dividend deductions was eliminated. Now dividends from current after-tax profits are taxable at a rate of 35% at the source and are then taxable at 10% at the personal level or when they are remitted by a foreign subsidiary to its home country.⁴ If this type of dividend is distributed to other domestic corporations, there is no tax. Although this change reduces the neutrality of the system, as will be shown later, it facilitates tax administration, especially under debt financing, where the deduction of dividends can be a source of significant distortion because it is particularly difficult to administer.
- (d) Full expensing of the present value of depreciation (PVD) was significantly reduced for the metropolitan areas of Mexico City, D.F., Monterrey and Guadalajara by allowing only a maximum deduction of 60% of the present value of depreciation. This reduction practically eliminates the incentive to use this instrument in the main industrial areas. It seems the Government has opted practically to eliminate this incentive instead of accompanying its application with a reduction in interest deductions to restore the neutrality that would come with a consistent application of this variant of the full expensing incentive.
- (e) A new tax on business assets was created. The base of this tax is the sum of financial, fixed, land and inventory assets; the rate of taxation is 2%. The effect of this tax in the case of new investments is minor, because the tax is due only after two years

⁴ In this last case the 10% withholding tax on dividends applies only if the tax rate on foreign dividend income, at the corporate level, is below 30% in the home country. If dividends are distributed to foreign individuals the 10% withholding tax applies in all cases.

of operations, and the tax payments can then be credited against the CIT payments. Firms in the process of restructuring with a long period of losses may not gain the two-year tax break as is the case with new investments.

B. Effects of the New Tax System on the Marginal Effective Tax Rates (METRs)

4.10 The effects of the tax reforms on investment decisions are very important to Mexico, particularly at this juncture, as public investment and foreign borrowing are no longer major contributors to economic growth because of the burden of external debt in the Government budget and the tightness of the external credit markets. This section analyzes the effects of the income tax system on investment and its international competitiveness. The analysis centers on the system as revised most recently, on the assumption that the reform will survive over the medium term. The properties of the new tax system are examined, particularly in terms of the level and variation of the METRs under different mixes of financial sources, different mixes of physical assets with different economic lives, and different rates of inflation. This approach permits observation of the relation between the statutory rate and the METR, the degree of neutrality of the system, and its sensitivity to changing financial, asset and inflationary conditions. As the new tax system is being implemented in full beginning in 1989 and investment decisions are made within a medium-term time-frame, it is reasonable to assume that the CIT rate for investment projects will be 35%, i.e., the rate that will be applicable in 1991. As explained below, the new tax system will improve neutrality and reduce the variance in the METR to changes in financing and asset mixes and the rate of inflation.

4.11 The METR is defined as the difference between the before- and after-tax rate of return of a project as a percentage of the project's before-tax rate of return. It measures the wedge that the income tax system imposes on the market for investment. As such, it measures the distortions the tax system imposes on this market but does not incorporate the general equilibrium effects of the tax policy changes.

4.12 As usual, the calculations of the METR are carried out using a hypothetical standard project with a fixed pre-tax rate of return of 10%, a given time horizon of 10 years and a replacement investment rule that sets reinvestment at the rate of economic depreciation. Following this approach allows evaluation of the invariance properties of the system, i.e., whether there are differences between the statutory rate and the METR of the project, and it also throws light on the magnitude of the distortions imposed by the tax system on investment decisions. (See Annex 1 for details on the specific assumptions for METR calculations.)

4.13 The effective tax rates at the corporate and individual levels are higher than the statutory rates because workers' profit-sharing (WPS) is not deductible for tax purposes. The effective CIT rate rises to 38.9% because 10% of the taxable profits is paid as labor profit-sharing and is not deductible for the CIT calculation; therefore, the effective CIT becomes 38.9% (35/90). The assumption is that WPS is treated as a tax by the firm.

Alternatively, it could have been treated partially as a tax and partially as part of wages.⁵ The effective rate on distributed dividends from current profits is then $45\% = (35 + 5.5)/90$, which is higher than $41.5\% = (35 + 6.5)/100$, which would be the effective rate if WPS were zero.⁶

4.14 The METR is sensitive to the different dividend policies available to a corporation. Although dividend policy is a matter of indifference to corporations in a world with efficient capital markets, no transaction costs and no taxes, this assumption does not apply when dividends are taxed at the corporate and individual levels. To capture the whole range of possible dividend policies, the calculations were performed for two extreme cases: (a) under an assumption that all current cash dividends are distributed, and (b) under an assumption that all current after-tax profits are retained. Based on these alternative assumptions, the METR model is applied to different financial, asset and inflationary states to measure the effect of the new tax system on the market for investments in Mexico. The analysis applies to both individual domestic and foreign stockholders and to foreign corporations that are stockholders of a resident corporation. In this last case, the 10% withholding tax on dividends applies only if the tax rate on dividend income in the country of the foreign corporation is below 30%.

4.15 In the case of full distribution of dividends and full equity financing, the new 1989 system is invariant to changes in inflation rates and the lives of assets. As Table 4.2 shows, the METR in this case is 45.0%, the same as the effective tax rate at the individual level (45%). The invariance of the system is, however, partially altered in the case of debt financing, when the METR is lower than under equity financing, ranging from 38.7% under zero inflation to 41.6% with 50% inflation. This reduction in the METR occurs because, under debt financing, the stream of taxable income is moved forward by the deduction of interest payments, which are concentrated in the first years of a project. This condition in turn reduces the present value of the taxes paid under this case as opposed to under the full equity financing case.

4.16 The current income tax system has on average lower and less variable METRs than did the 1987 system, which allowed the deduction of dividends and which taxed dividends at the individual level at a 55.6% effective rate. In the full equity financing case, the 1987 system has a METR of 55.6%, which is higher than the 45.0% rate of the current system and which is also invariant to changes in inflation rates and asset lives (Table 4.2). The reason for the difference in METRs is that the last modification of the system lowered the effective rate by 10 percentage points. In the case of

⁵ The WPS acts like a tax on the labor market, with the rates varying in direct proportion to the capital intensiveness of the firm and with the tax collected by the workers. Here we make the extreme assumption that the labor supply is perfectly elastic, i.e., all the burden of the "tax" falls on demand.

⁶ Assuming taxable income is 100. Under WPS it is distributed as follows: 35 CIT, 10 WPS, 5.5 PIT and 49.5 net dividends. When WPS = 0, the distribution is as follows: 35 CIT, 6.5 PIT and 58.5 net dividends.

debt financing, the 1987 system shows a wider range of variation in the METR, with the rates going from 31.2% under zero inflation to 44.7% under 50% inflation. The 1987 system also clearly favors debt financing, because loan repayments minimize cash dividend distributions; therefore net income is mainly taxed at the CIT rate, which is lower than the PIT rate. In sum, the 1987 system had a wider variance in the METR than does the current system and at low levels of inflation generated lower rates than does the current system.

**Table 4.2: COMPARISON OF THE INVARIANCE PROPERTIES OF THE METR
UNDER FULL DIVIDEND DISTRIBUTION IN THE 1987 AND 1989
TAX SYSTEMS
(%)**

Inflation	<u>Full Equity Financing</u>		<u>Debt Equity Financing^{a/}</u>	
	1987	1989	1987	1989
0	55.6	45.0	31.2	38.7
10	55.6	45.0	35.6	39.4
50	55.6	45.0	44.7	41.6

Source: Staff estimates.

a/ This case assumes that 50% of investment is debt-financed.

4.17 If current profits are fully retained, and assuming these funds are used to finance new projects, the METR in the 1989 system is 38.9%, i.e., it is equal to the effective CIT rate. This rate is also invariant to changes in the lives of assets, debt financing and rates of inflation. The same result holds for the 1987 tax system because the 1987 and 1989 tax systems are identical when dividends are not distributed.

4.18 A possible strategy for Mexican stockholders to minimize their overall tax payments on investment in a project would be not to receive dividends but instead to take advantage of the capital gains accrued to the firm from retained earnings, which would be realized when they sold their shares on the Mexican stock exchange, where capital gains are tax-exempt. In this case, Mexican stockholders would pay 38.9% at the margin for their cash earnings instead of 45.0% in the case of full equity financing. This alternative is not open to foreign stockholders who want their cash outside Mexico, because remittances of the proceeds of the sales of shares would be taxed at 40%. Moreover, when the recipient of current dividends is a foreign corporation that has income tax rates higher than 30% in its home country, it is exempted from the 10% rate on distributed dividends. Therefore it will not need to retain earnings to minimize tax payments.

C. The Effects of Investment Incentives on the METRs⁷

4.19 The Effect of CEPROFI on the 1989 Tax System. Until the end of 1987, tax credits were the main incentive for investment. Since then, their application has been restricted to small and micro enterprises and to some very specific subsectors. Until 1987, tax credit rates varied between 10% and 40% of investment expenditures, depending on sectoral priorities, location and size of the enterprises; in addition, full depreciation of the invested assets was allowed. Tax credits were issued in the form of negotiable paper called fiscal promotion certificates (CEPROFIs) that could be credited against any federal tax. These incentives have been very distorting because the tax credits with full depreciation allowances permitted high private profitability of projects with negative economic returns. The application of the system, however, was significantly reduced with the December 1987 Pacto and the August 1988 Decree that restricts its application to small enterprises. In addition, in practice the value of the CEPROFIs are not indexed to inflation even though payments are made long after the investment actually took place. Although CEPROFIs are minor incentive instruments, it is still important to measure and demonstrate the potential distortionary effects the CEPROFI system has on the present tax structure. (For details of the tax credit system see Annex 2.)

4.20 The application of CEPROFI tax credits in the 1989 tax system would generate heavy subsidies for promoted activities and bias investment toward short-lived assets and debt financing. Adding a tax credit for investment in the 1989 tax system with full dividend distribution not only breaks the invariance properties of the system but also heavily subsidizes the promoted activities. The subsidies are larger the shorter the life of the assets invested, the higher the use of debt financing, and, in the case of debt financing, the smaller the rate of inflation.

4.21 The calculations assume a 30% investment tax credit, which is paid soon after the investment is realized. Under full equity financing, the METR ranges from -15.0% for long-lived assets to -41.6% for short-lived ones; the METR does not vary with inflation in these cases (Table 4.3). The reason for the lower METR for short-lived assets is mainly that, as these assets depreciate faster than do longer lived ones, more tax credits can be obtained and therefore less taxes are paid. The METRs range from -42.5% to -146.7% in the debt financing case (Table 4.3). The increase in the subsidy in this case is explained by the fact that tax credits are a fixed percentage of overall investment, whereas taxable income is linked to equity financing and diminishes as debt financing increases. The reduction in the subsidy rates (i.e., negative METR) as inflation rises is the result of the effect of inflation on interest payments, the higher the inflation rate, the higher the "amortization component" of interest payments, a condition that twists cash

⁷ The calculations in this section differ from those in "Mexico: Tax Reforms for Efficient Growth," World Bank Report No. 9087-ME because of differences in the assumptions about depreciation rates and the life of the project. However, the directions of the changes in the METR under the various scenarios are the same.

outflows backwards and lowers the rate of return on equity. In sum, the CEPROFI highly favors: (a) leveraging investment finance; and (b) projects with short-lived assets. The system therefore contradicts the overall goal of the new trade policy regime regarding the uniformity and neutrality of the incentives faced by the industrial sector.

Table 4.3: EFFECT OF THE INVESTMENT TAX CREDITS (CEPRCFIs) ON THE METR UNDER THE FULL CASH DIVIDEND DISTRIBUTION SYSTEM IN THE 1989 TAX SYSTEM (%)

Inflation	<u>Full Equity Financing</u>			<u>Debt Equity Financing^{a/}</u>		
	Short-lived Assets	Base Case ^{b/}	Long-lived Assets	Short-lived Assets	Base Case ^{b/}	Long-lived Assets
0	-41.6	-35.8	-15.0	-146.7	-132.5	-84.2
10	-41.6	-35.8	-15.0	-125.1	-125.1	-68.9
50	-41.6	-35.8	-15.0	-84.9	-75.5	-42.5

Source: Staff estimates.

a/ The debt equity financing case assumes that 50% of investment is debt-financed.

b/ The base case assumes that 40% of the assets lasts 20 years, 40% lasts 10 years, 10% lasts 5 years and 10% (land) lasts indefinitely. The short-lived asset case assumes 100% of investment of the project has an economic life of five years. The long-lived asset case assumes 100% of the investment assets of the project has an economic life of 20 years.

4.22 Expensing of the Present Value of Depreciation. This new investment incentive is not an incentive for the metropolitan areas of Mexico City, Monterrey and Guadalajara (where only 60% of the PVD is expensed) under the assumption that the long-run real rate of interest is 10%. It operates as an incentive to promote regional decentralization, since the PVD is higher (100%) for the less developed areas of Mexico. As the calculations in Table 4.4 show, the PVD is not an incentive for the industrial zones because 60% of it, even when discounted at the real rate of 7.5% for tax purposes, amounts in most cases to a lower deduction than occurs with normal depreciation discounted at the assumed real rate of 10%.

**Table 4.4: EFFECT OF EXPENSING THE PRESENT VALUE OF DEPRECIATION
ON THE METR UNDER THE FULL CASH DIVIDEND DISTRIBUTION
IN THE 1989 TAX SYSTEM**

Inflation	<u>Full Equity Financing</u>			<u>Debt Equity Financing^{a/}</u>		
	Short- lived Assets	Base Case ^{b/}	Long- lived Assets	Short- lived Assets	Base Case ^{b/}	Long- lived Assets
<u>Expending 60% of PV depreciation</u>						
0	84.6	58.8	47.8	100.4	61.7	43.5
10	84.6	58.8	47.8	98.7	59.4	42.6
50	84.6	58.8	47.8	90.7	57.8	44.2
<u>Expending 100% of PV depreciation</u>						
0	43.3	41.1	39.2	41.5	38.4	32.9
10	43.3	41.1	39.2	39.3	36.4	31.4
50	43.3	41.1	39.2	38.9	36.4	33.1

Source: Staff estimates.

- a/ The debt equity financing case assumes that 50% of investment is debt-financed.
- b/ The definitions for the base case the short- and long-lived asset cases are the same as those given in Table 4.3.

4.23 The introduction of expensing of the PVD in the 1989 tax system, assuming a 10-year project horizon, raises the METRs in industrial areas and lowers them in less developed areas and biases investment toward long-lived assets. Table 4.4 shows that if 60% of the PVD is expensed, the METRs are above the base case METR of 45% (i.e., the METR without investment incentives) in most scenarios. The reason is that the gains from expending 60% of the PVD of a long-lived asset (that is, resold before full depreciation) are much less than if 100% of the PVD is expensed. Under a 100% PVD, the METRs drop below 45%. This system will encourage investment if, under the full PVD deduction, the planning horizon of the investor is on the short side (say, 10 years, as assumed in the model), whereas the life of a longer lived asset is 20 years, and/or the after-tax rate of return of the system without incentives is above 7.5%.

4.24 If, however, the operating horizon is extended, even in the 100% PVD case the METRs end up higher than the base case rate. The reason is that the capital gains on reselling the assets before full depreciation decrease and eventually vanish as the operating horizon increases. Also as noted in Table 4.4, the PVD system has a bias toward long-lived assets; this situation

results, in the case of short-lived projects, from the larger gains of reselling non-fully depreciated long-lived assets and, in the case of long-lived projects, from the fact that the streams of depreciation of long-lived assets are smaller than with shorter lived ones.

4.25 Expensing of PVD is not neutral with respect to the type of financing used. When 60% of PVD is expensed, the variability of the METR with respect to asset lives under debt financing increases drastically. METRs are lower than in equity financing only when investments are on long lived assets. There is no clear explanation on why this is so. When 100% of PVD is expensed, the METRs are consistently lower under debt financing, where additional deductions are gained from interest payments, than under full equity financing. Overall, under 100% expensing of PVD, the effect of the subsidized (7.5%) discount rate brings METR below the basic case of 45%, whereas when only 60% of PVD is deducted, that subsidy is outweighed by the drastic cost in the depreciation deduction of 40% of PVD.

D. Competitiveness of the Mexican Tax System

4.26 Mexico is a price-taker in the international capital market. That is, the net return on investment for the country is given. If Mexico lowers its effective tax rate on direct foreign investment (DFI) (a composite of the effective CIT plus the dividend PIT rates) below the internationally given rate, it will not attract new investment. The only effect will be to lose domestic tax revenues because the home country will collect the difference between the Mexican and home rates. If Mexico raises its rate above the international rate, DFI will be discouraged because the net returns would be less attractive. Therefore, the optimal policy for Mexico is to tax DFI at the same rate as does the home country (price setter) in the case of new investments. This approach is valid for Mexico as well as for other small countries competing to attract foreign investment.

4.27 Table 4.5 shows a comparison of the CIT, PIT and other relevant rates for Mexico, the US and Canada. It can be assumed that Mexico is a price-taker, the US a price-setter. Within this context, it is possible to investigate if present Mexican tax policy conforms to the optimal tax policy with respect to DFI.

4.28 The relevant tax rate for foreign corporations in their home country is a CIT of 38%, the effective CIT rate in the US, given that on average the state CIT rates are 6% and are deductible when applying the US federal CIT rate, which is 34%. This amount is the maximum that corporations can credit for taxes paid abroad. On the other hand, the relevant tax rate for foreign corporations in the host country (Mexico) is the effective CIT rate, which is 38.9%. It is the relevant rate because, under the new 1989 tax law, dividends distributed to foreign companies are only taxed at the corporate level, and not when remitted, if the income tax rate of the home country is higher than 30%, as is the case in the US. The relevant Mexican rate for foreign corporations is therefore slightly above the corresponding US rate. It should be lowered if Mexico is going to attract DFI from the US,

even without taking into account the differential risk factors in both countries.

Table 4.5: TAX RATE COMPARISON--MEXICO, CANADA, AND THE US, 1989
(percent)

	Mexico ^{a/}	Canada	USA
Reinvested earnings	38.9	43	38
Dividends			
Corporate	38.9	43	38
Personal	45	60.1	57.0
Withholding taxes			
Interest	21/0	28	30
Dividends	10	25	30
Royalties	40/0	25	30

Source: Fernando Sanchez Ugarte, "Taxation of Foreign Investment in Mexico: The North American Perspective," a paper presented at the seminar "Dynamics of North American Trade and Economic Relations," University of Toronto, June 1988.

a/ Staff estimates based on the December 1988 modification of the tax code (see para 4.13).

4.29 In the case of remittances to individuals, the effective Mexican rate is 45%, which is lower than the corresponding individual US rate, which is 57%. In this case, the rate is competitive. However, typically foreign investment does not enter Mexico from individuals. Usually the foreign investor is a corporation that sets up a resident subsidiary in the host country.

4.30 In the case where the profits of a foreign subsidiary resident in Mexico are reinvested, the relevant tax rate influencing the decision to reinvest is the effective Mexican CIT rate. Because tax deferral is allowed (in the US), reinvested funds are shielded from the home country tax system and are simultaneously subject to the Mexican CIT rate on retained earnings (38.9%). Thus, the relevant rate for the reinvestment decision of foreign subsidiaries is the effective CIT rate of the host country (Mexico). In the case of this type of investment, the host country has a degree of freedom in providing an incentive by lowering the effective CIT rate. It can do so readily by making the WPS deductible for the calculation of the taxable base of corporations. Under the present tax system, a reduction in the effective CIT rate along the lines suggested above would help attract new foreign investment as well as promote the reinvestment of profits.

E. Conclusions

4.31 Major advances have been made in reforming the tax system since December 1986. The indexation of interest payments, depreciation and inventories have made the system less biased toward debt financing and a high inflation climate. In 1989, the METRs will be lower for projects financed by equity, mainly because the personal income tax rates will be lower and dividends will be taxed at the CIT rate and at the personal level at 10%, instead of being taxed fully at the higher PITs. The METRs are still generally lower for projects financed by debt, but the rates seem higher after the changes introduced in 1989 (Table 4.2). The 1989 changes have also lowered the CIT to a level that would make effective tax rates closer to the levels in the US and Canada. Beginning 1990, further changes were implemented; the PIT was lowered to 35% and the 10% tax on dividends at the personal level was eliminated.

4.32 The Government eliminated most tax credits in 1987/88. These credits provided large subsidies to their recipients, although few industries actually benefited from them as their distribution largely favored capital-intensive public enterprises producing heavy intermediate goods. The tax credits also seemed to have a built-in bias toward debt financing and short-lived assets, a bias that did not conform to the goals of the tax system. Thus the elimination of the credits is consistent with the new trade policy because it substantially increases the neutrality of the tax systems to permit the allocation of resources in the direction of comparative advantage. The tax system in 1988 offered an alternative incentive (that was still in transition that year), in that firms could deduct immediately the present value of depreciation. In 1989, this provision will be limited to non-industrialized states and seems to be an instrument to compensate for the negative externalities of opening an industry in remote areas, rather than as a net incentive to investment.

4.33 The tax rates applied to foreign investment have also been brought closer to the levels in the US and Canada, two of Mexico's major financial sources. However, further improvements could make the Mexican tax system more attractive to foreign investors, such as slightly lowering the effective tax rates on the profits of foreign corporations. The tax system could also be made more attractive for reinvestment of earnings by foreign subsidiaries by lowering the effective CIT rate, possibly by making the WPS deductible in calculating taxable base.

CHAPTER V

LABOR MARKET REGULATION

5.01 Since 1982, the labor market has had to deal with a substantial contraction of the economy and subsequent slow recovery of the industrial sector. However, much of the fall in the demand for labor during this period was absorbed by a drastic decline in real wages--40% between 1980 and 1987. As a result, open unemployment, at least in the formal sector, did not increase dramatically. However, the trade reform is expected to lead to further structural adjustments that may require substantial reallocation of labor if the factors are to be utilized more efficiently under the new market signals.

5.02 The labor market is a special concern to industrial adjustment for three reasons. First, a further fall in real wages and employment would have far-reaching social implications. Labor is already perceived as the major loser in the macroeconomic adjustment of the past decade. Second, reallocating labor, unlike operations in the goods market, has substantial informational costs as a result of the heterogeneity of skills, firm-specific human capital and market imperfections, which could all make adjustment difficult. Third, the manner in which labor-firm (including the Government) relations was carried out, as discussed below, during the period of expansion may not be sustainable during a period of decline (or a period of restructuring with little or no growth in the short term). Various institutional adjustments may be necessary to reduce the costs and increase the payoffs from labor reallocation. These adjustments would include, among others, labor regulations and other forms of collective bargaining and dispute resolution.

5.03 This chapter describes and analyzes two important characteristics of the Mexican labor market -- extreme wage flexibility and rigid institutions. Even though the institutional issues cover a broad range of topics, this chapter limits itself to a few of the laws and regulations governing unions and job security that are perceived as crucial. The objective of the analysis is to indicate potential regulatory obstacles to labor mobility, in an initial attempt to generate further hypotheses about labor market regulations in Mexico. Much of the discussion on regulatory issues is based on responses from a survey of a select group of firms, union leaders and lawyers specializing in labor issues, who provided information on how these regulations have been practiced and enforced.

A. Trends in the Labor Market

5.04 Three factors may explain the recent trend of a substantial decline in real wages accompanied by relatively stable unemployment rates (Table 5.1). First, an agreement among Government, business and labor puts a priority on avoiding massive unemployment. Second, employment in the public sector increased 5.1% per year between 1980 and 1986, whereas total employment grew only 1%. Finally, while exact measures are not available, there are

indications that the informal sector has increasingly absorbed new entrants into the labor market, as well as labor dismissed from formal activities.¹

Table 5.1: LABOR MARKET INDICATORS
(1980 = 100)

	Employment ^{a/}			Unemployment Rate ^{b/}	Real Wages ^{c/}
	Total	Tradables	Nontradables		
1980	100	100	100	4.5	100
1981	106	106	106	4.2	103
1982	106	103	107	4.2	101
1983	104	103	105	6.7	77
1984	107	106	108	6.0	71
1985	109	107	111	4.8	72
1986	106	103	107	4.3	70
1987	111	89	108	4.2	60

Sources: Employment--INEGI, National Accounts; unemployment--ECLA (1987); and real wages--INEGI.

a/ The figures for 1987 are preliminary.

b/ National average, expressed as a proportion of the labor force.

c/ Corresponds to manufacturing wages.

5.05 Employment in the manufacturing sector was more responsive to the fall in output (Table 5.2): between 1982 and 1987, employment declined by 13% as output declined by about 5%. Moreover, real wages fell by 40%. However, whereas output and sales rose by 3.7% and 6.3%, respectively, between 1986 and 1987, employment did not grow. Excess labor and increased labor productivity may have accounted for this trend. Average real wages continued to fall.

¹ For example, between 1982 and 1986, the employment of non-paid relatives rose, as did the share of employment in commercial activities. Finally, PREALC estimates that employment in the informal sector fluctuated between 24.8% and 29.5% of employment during this period.

**Table 5.2: MEXICO -- ECONOMIC INDICATORS FOR MANUFACTURING
(1982 = 100)**

	Employment	Real Wages	Output <u>a/</u>	Sales <u>b/</u>
1982	100	100	100	100
1983	90.7	76.6	84.7	88
1984	90.3	69.6	90.9	19
1985	92.4	71.7	95.7	102
1986	87.8	69.0	87.3	95
1987	87.1	59.6	90.5	101
1988 <u>c/</u>	87.0	n.a.	91.2	103

Source: INEGI, Monthly Manufacturing Survey

a/ Volume index of production.

b/ Total sales (deflated by the WPI).

c/ Average January-May.

Table 5.3: PRODUCTION AND EMPLOYMENT INDEXES BY MANUFACTURING BRANCH

		1985	1986	1987
Food, beverages and tobacco	Q:	100	98	99
	L:	100	103	103
Textiles	Q:	100	92	93
	L:	100	99	94
Wood and wood products	Q:	100	90	96
	L:	100	90	90
Paper and editorial	Q:	100	96	95
	L:	100	104	100
Chemicals, rubber and plastics	Q:	100	97	105
	L:	100	101	103
Nonmetallic minerals	Q:	100	80	100
	L:	100	95	101
Basic metals	Q:	100	86	107
	L:	100	78	78
Machinery and equipment	Q:	100	84	86
	L:	100	96	96

Note: Q is Production; L is Employment.

Source: INEGI, Monthly Manufacturing Survey (July of each year).

5.06 There was also very little change in the distribution of employment across manufacturing industries: employment fell in almost all of

them between 1982 and 1986. Since 1986, while output seemed to be expanding in the food, nonmetallic, chemical, wood and basic metals industries, employment remained stable. Output and, to a lesser extent, employment rose in the nonmetallic industries. Average labor productivity has risen in most sectors, especially basic metals.

5.07 A preliminary comparison of Mexican and international labor costs (i.e., wages plus the non-wage costs of labor) suggests that the fall in Mexico's real wages may have brought them closer to those of potential competitors. These trends merit closer examination, however, given the problems of comparability that result from the exchange rate movements and differences in labor quality and capital/labor ratios. Nevertheless, to the extent that these figures indicate the directions and relative magnitudes of wage changes, sustainable increases in real wages in Mexico may not be possible without prolonged increases in labor productivity. This pattern has important implications for future policy, since some past estimates of labor productivity show that Mexico has neither been competitive, nor has it increased its competitiveness relative to other developing nations. For example, even though Mexico's hourly labor cost is close of that of Korea and Brazil (Table 5.4), its average labor costs, divided by average labor product (1987 values), is higher than in those two countries.

Table 5.4: LABOR COSTS IN MANUFACTURING
(US\$ per hour)

	Mexico	Brazil	Chile	Korea	Hong Kong	US	Canada
1978	1.7	1.3	1.1	0.8	1.2	8.3	7.3
1979	2.0	1.4	1.3	1.1	1.3	9.0	7.7
1980	2.5	1.4	1.4	1.0	1.5	9.8	8.5
1981	3.1	1.6	2.4	1.1	1.6	10.8	9.3
1982	2.1	1.9	2.1	1.1	1.7	11.6	10.2
1983	1.5	1.3	1.3	1.2	1.5	12.1	11.0
1984	1.7	1.2	1.1	1.3	1.6	12.5	11.1
1985	1.7	1.2	0.8	1.3	1.8	13.0	10.9
1986	1.6	1.6	0.8	1.3	1.9	13.2	11.0
1987	1.5	1.5	0.9	1.7	2.1	13.5	12.0

Source: Luis Riveros, "International Comparisons of Wage and Non-wage Costs of Labor," CECTMG, World Bank, Washington, D.C., 1989, mimeo.

B. The Role of the Unions

5.08 The Federal Labor Law (FLL, 1931, as revised in 1970) that regulates union activities allows strikes and temporary plant closures. The Conciliation and Arbitration Courts determine the validity of the strikes and resolve conflicts and differences between employers and employees. The law allows the creation of unions at the firm level and of more than one union per

firm, although, in practice, once a union is created within a firm, all workers are automatically incorporated. The law also permits unions to form at the branch level or among professions or specific job groups. Unionization is not, however, compulsory: the law excludes "trusted workers" (trabajadores de confianza) and temporary workers (paid by piece work) from being unionized.

5.09 Unions affect Mexican firms beyond wage negotiations and conflict, as the FLL provides them a role in the employment decisions of firms: according to the exclusion clause, an entrepreneur is obliged to fire a worker who has been expelled from the union;² and according to the admission clause, the union has a right to hire the person who fills the vacancy created through the use of the exclusion clause. These clauses have been powerful tools in slowing work, as reported by interviewed firms. While they are only two of the many provisions governing firm-union relationships, they were often cited by firms, union leaders and lawyers interviewed for this study.³ Because of these two provisions, firms that have unions often negotiate the composition of their employment with the unions.

5.10 The firm also has to obtain the union's agreement to hire "trusted" workers and temporaries, who are exempt from the unions and their laws. Firms usually hire these types of employees to avoid conflict with the unions and to reduce the severance costs when employment is terminated (see the next section). Moreover, because firms fear the emergence of militant unions, increasingly many employers encourage the formation of "collaborative" ones.

5.11 According to the interviews, the extent to which a firm may actually hire temporary/trusted employees depends fundamentally on the willingness of its union to collaborate. About 20% of total employment in the sample of firms interviewed is temporary workers. Similarly, trusted employees are becoming more popular, accounting for an average of 3% of these firms' employment.

5.12 The FLL also governs collective bargaining, used to reach agreements on wage adjustments and working conditions. Although collective bargaining is normally conducted at the firm level, the law also allows negotiations at the branch (industry category) level. If two-thirds of the workers and firms within a branch come to an agreement, it becomes a law that covers the entire branch (contrato ley). This process has been observed in textiles, sugar and other highly unionized industries. This system imposes a major burden on small- and medium-sized firms, which may be unable to cope with the agreements reached among workers and owners of bigger firms.

² Firms may also use this clause to their advantage: they report that they often use this measure to dismiss workers with the cooperation of the firm-level "collaborative unions." However, this process is particularly difficult with large unions, since two-thirds of the members must agree to the dismissal.

³ The sample of firms contacted was small (15) and may not be representative of industry as a whole. Six union leaders and lawyers were also interviewed.

5.13 Incidence of Unionization. Unionization is common in medium- and large-sized private firms and parastatals. The legal requirements for constituting a union are generally simple, but medium- and small-sized firms normally cannot accommodate the minimum number of workers (20) needed to create a union. Table 5.5 shows the degree of unionization across selected industries in Mexican manufacturing, with total union membership expressed as a proportion of each branch's employment. High membership rates are observed in electrical machinery, rubber, oil, cement and textiles, while low membership rates are observed in iron and steel, food and glass.

Table 5.5: DEGREE OF UNIONIZATION IN MANUFACTURING

Branch	Membership Rate ^{a/}
<u>Highly unionized branches</u>	
Electrical machinery	52.4
Rubber	43.6
Oil	57.1
Cement	40.9
Textiles	41.8
Automobile	10.3
Chemical	10.1
Paper	17.1
Beverages	15.4
Wood	11.7
Tobacco	15.6
<u>Low unionized branches</u>	
Petrochemicals	8.1
Iron and steel	3.8
Food	5.7
Glass	3.3

Source: A. Tornell: "El Sindicalismo Contemporaneo en Mexico," FCE, Mexico, 1983.

a/ Expressed as a proportion of each branch's employment.

5.14 Union membership is pervasive among parastatals. For example, the union membership rates for sugar, petroleum, railroads and vegetable oils are 79.2%, 57.1%, 79% and 46.2%, respectively, generally higher than the rates observed in the private sector. For some services, such as basic telephones and electricity, unionization is even more pervasive.

5.15 Impact of the Unions. The impact of unions on wage levels, employment and productivity is difficult to ascertain for several reasons. First, it is hard to isolate the effects of unions per se from other

determinants. Second, how effective unions are in influencing firm behavior may depend on their militancy, for which proxies are difficult to construct. In this paper and the studies it cites, for instance, a very rough proxy is used -- the share of union members to total employment in the industry. Nevertheless, a few preliminary indicators of impact are presented.

5.16 The impact of the unions on wage levels is not clearly established. Some studies show that they have a positive and significant effect on the average salaries paid across industries.⁴ Additional econometric evidence suggests that average salaries are related to educational levels and training and in turn are systematically correlated with the rate of unionization, a pattern that reinforces the earlier findings. In a sample of manufacturing industries in Mexico, the average wages in industries that are heavily unionized are approximately 10% higher than in industries with less unionization.⁵

5.17 How effective unions are in influencing wages depends on how motivated firms are to comply with the labor legislation. A look at various industries shows that wages seem higher and have lesser dispersion in industries that are most likely to comply. The biggest difference in levels was found between large and small firms, with the average wages in large firms exceeding those in smaller ones by nearly 50%. At the same time, various caveats such as the possibility that firm-specific capital could be more important in larger firms should be considered. Wages in public enterprises also tend to be higher than in private enterprises. Wages tend to vary more in industries with large firms and less market concentration and among consumer durables. Lower dispersion was observed among industries with high market concentration and predominantly small and medium-sized firms.

5.18 A recent study comparing unionized and non-unionized firms concluded that, after adjusting for all other differences, seniority substantially increases with the degree of unionization on average. This finding suggests that unions are particularly concerned with job security, perhaps more so than with real wage increases. This hypothesis is consistent with union practices (one firm, one union) and the implicit contract between firms and unions. Union leaders interviewed maintained that, given the possibility of labor dismissals, they would negotiate to protect jobs, even at the cost of further wage declines.

5.19 A simple comparison of wage and employment data in highly and less unionized branches suggests several points about the employment-wage tradeoff (Table 5.6). During the period 1982-87, the proportional decline in employment was lower in the highly unionized industries and was relatively

⁴ G. Osuma, "Las Distorsiones en los Mercados de Factores y Empleo: Evidencia de la Industria Manufacturera Mexicana," ITAM (unpublished thesis), 1983.

⁵ R. Samaniego, "The Structure and Working of the Mexican Labor Market," mimeo, 1988.

high for electrical machinery and textiles, two sectors that had been particularly affected by the trade liberalization. The wage decline was also lower in the highly unionized sectors compared with the low unionized ones, although the difference was not substantial. Thus, unions may benefit workers not only through ensuring job security, but also through some wage gains.

5.20 A more detailed analysis is based on a comparison of labor demand functions across industries in the two groups (see Annex Table A5.2 for a description of the model, its assumptions and its results). The highly unionized sector shows significantly lower employment-wage elasticity (-.58 compared to -1.17 among sectors with low unionization). In the longer run, its elasticity also rises, a pattern that demonstrates lags in adjusting employment to changes in wages and output. In contrast, the group with low unionization rates has almost identical short- and long-run employment-wage elasticities. In general, the labor demand functions of the two groups are significantly different.

Table 5.6: EMPLOYMENT (L), REAL WAGES (W) AND AVERAGE LABOR PRODUCT (Q)
ACROSS MANUFACTURING BRANCHES
(average rates of change 1982-87)

Branch	L	W	Q
<u>Highly unionized sectors</u>			
Petroleum and coal	-0.9	-8.0	15.6
Electric machinery	-4.6	-6.8	5.3
Rubber	-1.1	-7.6	6.8
Textiles	-3.6	-10.4	5.1
Non-metal minerals	-2.8	-5.2	--
Average ^{a/}	-3.6	-7.9	5.3
<u>Low unionized sectors</u>			
Petroleum refineries	-4.0	-3.3	1.6
Food	-5.1	-9.4	5.5
Iron and steel	-3.7	-8.5	4.3
Glass	-3.5	-6.6	5.9
Average ^{a/}	-4.6	-8.5	7.1
<u>All Manufacturing</u>	-4.2	-7.0	5.7

Note: The value between brackets corresponds to the average calculated by excluding nonmetallic minerals.

Source: Annex Table A5.1.

^{a/} Weighted by employment shares.

5.21 Table 5.6 also indicates relative changes in productivity over time. On average, productivity growth seems higher when unionization is

low, but the difference is slight. More observations are necessary to verify this point.⁶

5.22 The degree of union militancy seems to have declined over time, as shown by a few indicators (Table 5.7). The number of strikes fell from 675 in 1982 to 312 in 1986, and the average duration went from 38 to 20 days. Firms indicated, however, that militancy may not be manifested in strikes, but rather in the time spent in prolonged negotiations over who and how many people get fired or hired. There has also been increased bargaining over non-wage benefits as a way to get around the nominal wage freeze since late 1987. In 1989, although the number of recorded strikes fell to 125, there seems to have been a marked increase in labor militancy as indicated by a large increase in the number of calls for strike. This has been attributed mainly to prospective privatization and revisions in collective contracts.

5.23 There is some evidence that the composition of unions has also changed in the past two years. For example, a new confederation of unions, Federation of Unions of Enterprises in Public Goods and Services, consisting of employees in the national telephone and electricity companies, pilots, and potentially banking employees, has emerged recently. This new confederation has been perceived as more sympathetic to collective agreements between labor and firms that may be more suitable to firms that are in the process of restructuring. The patterns suggesting a change in the nature of unions and their attitude toward collective bargaining have been fairly recent, however, and are still not sufficient to make a general conclusion.

5.24 In addition, it is perceived that at least in some sectors industrial relations may also be involving and adapting to the needs of industry. For example, there is some anecdotal evidence that an increasing number of recent collective agreements in some sectors, such as among exporters, have instituted more flexible labor-employee arrangements. This is favorable in that it provides firms and unions to initiate contracts that favor more labor mobility even if the existing labor code is unchanged. However, it is also arbitrary, and provides opportunities for very restrictive regulations to arise and continue.

5.25 Measures of Conflict. The discussion above has used the rate of union membership as the indicator of the militancy of unions. Another indicator is labor conflict as it relates to the number of cases heard by the Conciliation Courts per industry. While this exercise is geared more toward generating hypotheses than to confirming them, this variable was correlated

⁶ Cross-country comparisons relating some measures of labor conflict to productivity growth show some negative correlation (Samaniego 1988, see footnote 5). The degree of labor conflict is defined as the number of work hours lost because of labor conflict, expressed as a percentage of total work hours. Annex Table A5.4 shows that the US, Hungary, Egypt, Turkey and Korea had relatively low labor conflict and high rates of productivity growth. Yugoslavia, Argentina, Chile and Zambia, on the other hand, show much higher labor conflict and lower productivity growth. Mexico's labor conflict level is higher than the average.

with some firm and industry characteristics using a small sample of industries. Labor conflict seems to have been negatively correlated with factor productivity, financial profitability, percentage of production being exported and market concentration. Capital-intensive firms seem to have had relatively more labor conflict.⁷

Table 5.7: SOME INDICATORS OF WAGE REVIEWS AND STRIKES

	1985	1986	1987 ^{a/}
<u>Wage reviews</u>			
1. Average nominal wage increase	32.9	36.0	32.2
2. Average increase in NWC ^{b/}	4.2	5.6	4.7
3. Number of firms negotiating	355	330	275
4. CPI inflation	64.9	104.5	109
<u>Strikes</u>			
5. Number (675)	125	312	174
6. Workers involved (000s) (213)	65	82	201
7. Average duration (days) (38)	6	20	20
8. Announced strikes (000s) (16)	8.7	11.6	6.1

Sources: 1, 2 and 3 obtained from monthly statistics of INEGI; 5, 6, 7, 8 taken from "Sintesis de Informacion Opocrtuna Sobre Negociaciones Colectivas de Trabajo de Empresas de Jurisdiccion Federal 1982-1988," Secretaria del Trabajo y Prevision Social, March 1988, and Informe de Labores 1986-1987, Secretaria del Trabajo y Prevision Social, 1987.

a/ Average for nine months.

b/ Non-wage costs of labor.

c/ The figures in parentheses are the corresponding value for 1982.

B. Job Security Legislation

5.26 The FLL has stringent job security provisions, several of which are as follows. An entrepreneur who wishes to dismiss a worker (by fair cause) has to demonstrate that the worker actually inflicted damage on the firm. Low productivity or redundancy are not legally acceptable as causes for dismissal. Workers dismissed "unfairly" are entitled to severance compensation equal to 3 months' pay plus 20 days' salary per year of service, and an additional 12 days of salary per year of service if the worker has been with the firm more than 10 years. If the dismissal was caused by technological or product changes, the dismissed worker receives an additional 4 months' salary plus the other payments. Among the firms interviewed, the average worker had about 12 years of service and could potentially get

⁷ Op. cit., Samaniego.

severance payments equal to 14 months' salary. The severance payments established by law are considered to be the minimum. Collective agreements normally stipulate additional compensation or benefits in the case of dismissals.

5.27 The financial cost of this system of severance payments may be very important for firms undergoing sizable layoffs. Consider a hypothetical manufacturing firm whose sales and labor proportions are the sector's average (Appendix Table A5.3). If it is assumed that 10% of the labor force has to be laid off at an average cost of one year's salary per worker, the total cost of severance compensation would be equivalent to 12% of total sales, or a whole month's wage bill for the firm (the figures are for December 1987). If the cause of the layoffs is attributed to restructuring, then the firm pays a higher severance allowance, as well as incurring the cost of training new workers.

5.28 Additional costs are incurred if a laid-off worker also demands reinstatement by filing a case with the Conciliation Court. The union provides legal support, if the worker wishes. The employer must either appear at the court personally or send a private lawyer. Large firms often employ permanent legal advisors for these cases. In the interviews, small- and medium-sized firms generally reported difficulties with these cases. The legal procedure lasts six months on average and, if the lawsuit is successful, is followed by further negotiations between the firm and the worker, usually mediated by the union.

5.29 To some extent, employers try to circumvent the job security regulations by hiring temporary and "trusted" workers. They are also encouraging independent "collaborative" unions. An additional way in which employers (particularly large firms who can afford prolonged lawsuits) reduce the cost of the job security legislation is by delaying payment of the compensation, so that its real value is less.

5.30 Interviewed firms reported that even though the system of laying off workers has not been transparent and has involved high costs, it was not a major financial burden until recently. Now, however, firms cite the combination of the reduced domestic market and increased import competition as requiring adjustments. To date, substantial adjustments in employment have been delayed by the foreseen financial costs in both severance pay and the long legal process and negotiations. Many foresee the possibility of bankruptcies being declared to hasten large adjustments in employment.

C. Conclusions and Policy Options

5.31 The Mexican labor market has adjusted to the decline in the domestic market through a drastic fall in real wages that has contributed to fairly stable employment. In manufacturing, however, wages and employment have both fallen. Very little change in the structural distribution of employment has been observed.

5.32 The Mexican labor market also shows some institutional rigidities that could be potential sources of large adjustment costs for firms that will need to undergo sizable reallocations of labor. The high severance payments and the right of unions to participate in hiring and firing decisions are features of labor legislation that seem to raise exit costs. Severance payments could have a high financial cost: an average manufacturing firm that lays off 10% of its labor force must pay the equivalent of a whole month's wage bill, an amount that tends to increase if firms shed workers because of technological change and other external factors. Union intervention usually raises the cost of firing because the process must be negotiated in the Conciliation Courts. The costs are even higher if the unions succeed in reversing the lay-off. The labor legislation also allows unions to influence employment decisions, i.e., who and how many workers to hire and fire. They are not, however, equally influential in all industries. Their main strength is found where collective agreements cover two-thirds of the firms in an industry, such as garments, and in some parastatals. This is one area of concern to firms and employees, and is recommended as a subject for future research.

5.33 The liberalization of the past three years has left Mexico at a juncture of structural change in which labor mobility is an important factor, particularly to industry. The private sector has indicated that even though the system of laying off workers has not been transparent and has involved high costs, it has not been a major financial burden until recently. However, firms foresee more sizable adjustments in their employment size and composition because of the changing economic environment. They are concerned that the unions may slow this process and that the financial burden will be high because of the severance payments and the legal situation. Workers, on the other hand, are concerned with the continued fall in their real wages, as well as their job stability or, at least, ability to retrain for other skills.

5.34 Some policy choices may be needed to reduce the costs to firms of labor reallocation as well as to reduce the social costs of temporary unemployment. Recommended measures for the short and medium term are the following. There is a need to implement a system of national training to support lay-offs. Workers who are displaced and need retraining may go through this program, which would provide information on the job market and skill retraining. Financing of this program could come from both Government and private sector contributions. The system of legal proceedings and negotiations for firing workers also needs to be simplified and its costs reduced. The administrative procedures of the Conciliation Courts could be improved, such as by providing time limits for negotiations and transparent rules of conduct (e.g., lawyers may represent employers). Another measure could be exemptions from the job security legislation. Since widespread exemptions may be politically sensitive, exemptions could be limited initially to export-oriented firms.

5.35 Longer term measures would include changes in the legislation to integrate union activities and job security legislation with economic goals. The rationale behind the admission and exclusion clauses that enable unions to interfere directly with employment decisions needs to be reexamined. Simpler

rules governing union-firm wage and severance negotiations are essential. The level of severance costs also has to be reevaluated and perhaps redesigned based on some analysis of experiences of other countries, as well as the development of institutions that could reduce the adjustment costs of unemployment to workers.

5.36 The policy recommendations were generated from a framework which focussed primarily on how labor legislation and practices may improve labor mobility to facilitate industrial adjustment. It is recognized that this framework is limited, and would have to be complemented by further understanding of other objectives that motivated the emergence of this legislation and their practices, such as the role of high severance pay as an alternative form of social security. There is also a need to view unions as institutions that evolve in response to the economic and political forces. Recent events have shown for example that the nature of a few unions has been changing as the need for adjustment to new economic policies became evident.

CHAPTER VI

REGULATION OF TRUCKING SERVICES

6.01 Analysis of the input-output table for 1970 and 1980 confirms that all subsectors of the economy depend heavily on transport services.¹ Any change (or lack of change) in the costs or efficiency of freight transport therefore directly enters into all economic activities. Concern over the level and quality of trucking services became more apparent after 1985, as the economy became increasingly open to external competition. In a survey conducted for this report in 1988, transport users, mostly manufacturing firms producing a broad group of commodities, complained strongly about the unreliability and low quality of transport services in Mexico. Many reported delayed shipments and damaged and lost merchandise. A relatively old trucking fleet further contributed to the low quality of services.

6.02 The road transport regulations that existed prior to 1989 largely explained the poor level of service available.² The provision of trucking services had been characterized by legal restrictions on entry (route concessions), as well as by regulations on cargo transactions that benefitted concessionaires. Prices were also administered. The system has provided little incentive for licensed truckers to improve their services, although independent truckers who operate in the parallel market that has emerged in response to the regulatory system are exerting some competitive pressure.

6.03 This chapter analyzes in greater detail how the system of trucking regulations actually affected industrial users by documenting some of the regulatory practices that existed prior to 1989 and linking them to the major problems users faced during this period. It first examines the results of the user surveys. It then looks at the regulatory setting and the major issues, emphasizing how the resulting practices of truckers may have contributed to the problems of users. Finally, it documents the radical deregulation that was introduced in early 1989 and indicates some of the observed preliminary impact.

A. Responses from Industrial Users

6.04 The trucking industry is an important mode of transport for business enterprises in Mexico. Close to 70% of all cargo moves by road, and the so-called "public trucking" sector (autotransporte publico federal) is the

¹ E. Davila, "La Reglamentacion del Autotransporte Publico," ITAM Working Paper, 1988.

² The term "level of service" refers to a combination of: (i) the length of time required before a truck arrives at the enterprise to pick up cargo once service has been requested; (ii) speed with which the truck moves the cargo, or days of elapsed transit time; and (iii) safe delivery of all the cargo to the point of destination.

only for-hire option available to industrial enterprises that do not own their vehicles (users). A cross-country comparison of usage of different transport modes shows that Mexico is a relatively high user of trucks (see Annex Tables A6.1 and A6.2.)

6.05 This study surveyed industrial users to determine their problems with public trucking. The firms interviewed produce a broad range of products and were located in various parts of Mexico (see Annex Table 6.3). The users generally agreed that the quality of trucking services was very poor and resulted in high implicit prices. They reported problems with the timeliness of deliveries and lost sales opportunities because of irregular services. In addition, they suffered from lost or damaged cargo. Some of the difficulties reported may be categorized as follows:

- (a) Unreliable service. Overall, users reported problems with the timeliness and quality of service. These complaints were more severe when the cargo had to cross route corridors and be transshipped. Users also had little or no protection in the case of lost or stolen goods; the coverage of insured cargo was generally low. Furthermore, the trucks were generally in poor condition, leading to a greater incidence of accidents and breakdowns that added to the losses and delays.
- (b) Uncompetitive practices. Shippers faced oligopolies at some cargo centers at the ports and could not negotiate directly or choose their carrier.
- (c) Lack of service. Users had difficulty getting service during peak harvest seasons and along certain routes or locations.
- (d) Inappropriate tariffs. Users had to pay prices which were fixed for all categories of service.

6.06 Users adapted to the unreliable trucking services in various ways. Some reported holding much higher levels of inventory than comparable firms in the US. However, larger inventories meant higher working capital requirements that in turn lowered cost-competitiveness. Others reported paying unauthorized higher tariffs to get better service. Still others invested in their own trucks because they could not obtain adequate service from the public fleet, particularly in terms of timeliness. Others hired unauthorized truckers. Some of these users commented that the better levels of service of unauthorized truckers outweighed the disadvantages, such as the use of older trucks. However, others noted that it was also risky to hire unlicensed truckers, because they were often made without contracts. Still others reported that even though they preferred to hire trucking for delivery, they often had to resort to other means, such as package services on intercity passenger bus lines.

6.07 The responses of users about pricing were mixed. The majority paid tariffs equal to or higher than the official one (Table 6.1.). It also appeared that discounting tariffs was not as widespread in 1984 as in 1988,

possibly as a result of the lengthy periods of low demand for services. The sample did not seem, however, to capture the differences in the development of the routes as trade became more liberalized. Some routes experienced heavier traffic and demand for transport services by 1988. Users also mentioned that unofficial surcharges for transport services were even more widespread during the boom in the late seventies. Of the five users who reported paying less than the official rate in 1988, two admitted to using unauthorized truckers, one hired his supplier of raw materials to deliver the cargo to him, and two actually obtained discounts from concessionaires of the public trucking fleet in return for assuring them of exclusive rights to the cargo. It is clear, therefore, that prices have varied from the official tariff structure in response to the market situation.

Table 6.1: SURVEY OF USERS -- APPLICABILITY OF THE OFFICIAL RATE

Response	1984	1988
Paid exactly the official rate	9	12
Paid below the official rate	0	5
Paid above the official rate	10	3
Total number of respondents	19	21 <u>a/</u>

Source: Op cit., Davila.

a/ One user reported an arrangement whereby he pays exactly 3% of the value of the cargo -- the result being above, below or equal to the official rate depending on his cargo.

B. The Regulatory Setting Before 1989 and the Main Issues

6.08 Many of the problems reported by the surveyed users were explicitly linked to the regulatory setting. The regulatory framework was based on legislation (promulgated in 1939) that viewed transportation as a public service, to be operated only with a state-awarded concession. In order to ensure the availability of transport services in all parts of the country, the regulations protected the investor in these services through restricting entry. While this rationale for protection may have been valid during the early stages of Mexico's development, the Government did not reduce the regulations until early 1989.

6.09 The following discusses the major features of these regulations and their practice before 1989. The system of regulations included quantity rationing (through concessions and route restrictions), cargo centers, specifications of service quality and administered tariffs. The regulations were based on the Ley de Vías Generales de Comunicación (LVGC) and the Reglamento al Capítulo de Explotación de Caminos de la Ley de Vías Generales de Comunicación (RCE). They were executed by the Ministry of Transport and Communications (SCT). Until 1990, truckers also received favorable tax

treatment and benefitted from subsidies from administered prices of diesel and road tolls.

6.10 Entry and Route Restrictions. Entry into the "public" trucking industry as a common carrier of public cargo required a concession from SCT (LVGC art. 153), which were granted only to Mexican-born nationals. New concessions, i.e., an increase in capacity, were very difficult to obtain since SCT had to consult with the incumbent truckers (cessionaires) on a particular route, who were grouped into Route Committees, on the need for additional service. The law decreed that all providers of the common service had to be grouped together, which led to the concept of route committees, consisting of concession holders within one route. Installed capacity on every route was also controlled through a ceiling imposed on the potential ton-km that could be transported at any time. Established concessionaires were given preference in receiving new concessions when additional vehicles were needed (LVGC art. 160). SCT issued provisional permits to vehicles from other routes only in extenuating circumstances or national emergencies. Users of services had no mechanism by which to request an increase in capacity on a particular route. The system of concessions and route restrictions strengthened the position of incumbent trucking firms and encouraged cartel behavior.

6.11 Transporters of "regular" cargo had to remain within one of the 11 route corridors specified by SCT. If a particular cargo had to cross into one or more of the other corridors, it had either to be unloaded and reloaded onto another truck or an arrangement was made with neighboring concession holders to allow passage (with the approval of SCT). The users bore the costs of the delays and losses resulting from the transshipment. They reported that delays and losses occurred more often at the points of transshipment. SCT itself also granted permits to firms to enable their cargo to cross routes; this practice widespread especially among large firms. Products classified as "specialized" cargo were not subject to route restrictions.³

6.12 SCT also issued 16 categories of permits to transport certain products. About 40% of the transported cargo, mostly agricultural products, had permits. Strong interest groups consisting of permit holders within each permit category existed.

³ SCT defines specialized cargo as including household moves, perishable items in refrigerated vehicles, large objects on platforms, telephone and electrical equipment, specialized chemicals and other bottled liquids, construction material, glass products in specialized vehicles and all unprocessed agricultural products. Currently, 97% of the people holding specialized cargo permits are authorized to move agricultural products. In terms of the number of vehicles registered to carry specialized cargo, 75% move agriculture, 8.5% are liquid tank vehicles and 5.7% are for construction material. All other cargo is considered regular and may be moved by any concession holder with the appropriate license specifying his route.

6.13 SCT also regulated loading and unloading cargo. SCT granted concessions for handling cargo movements at the railroad stations and border customs facilities, as well for the "drayage" services to cross the border. Often goods could not be removed without the services of the concessionaire. As with the route concessions and permits, entry was limited in these services, and cartels developed. The regulations on loading and unloading were enforced through cargo centers (see next section). The fees charged varied, depending on the cargo center the trucker was affiliated with.

6.14 Industrial enterprises wishing to operate their own trucks (own account operators) also needed to obtain a permit to carry exclusively their own cargo (LVGC art. 153). Given that most enterprises do not have directionally balanced cargo flows, own account trucking resulted in significant under-utilization of capacity by operators. The regulations therefore imposed an implicit tax on own account trucks. SCT also gave own account trucks permits to move public cargo only in extreme conditions (LVGC art. 153).

6.15 The Federal Roads Police was authorized to prevent movements of trucks without proper permits or concessions and to ensure that own account trucks moved only cargo belonging to their enterprise (RCE art.178). The police detained and inspected vehicles and required correct documentation to be presented. Prior to 1989, concessionaires and specialized cargo permit holders were concerned about corruption within the Federal Roads Police: it was reported that they frequently accompanied the police on investigations of traffic violations. In spite of their concerns, however, users revealed that unauthorized operations existed and offered savings of up to 30% on the official rates.

6.16 Cargo Centers. Cargo centers (centrales de carga) are associations formed by truckers within a route. The cargo centers were originally encouraged so that small trucking operators could take advantage of economies of scale in some services, e.g., insurance and administrative work, and to disseminate information on cargo movements better. The law, which specifies a need to combine and coordinate services on every route (LVGC art. 157), supported the creation of these associations.

6.17 The cargo centers, however, tended to limit entry. The use of the cargo centers was essentially mandatory since they had to certify or seal the bill of lading, thereby controlling cargo shipments. Some cargo centers, especially at the ports and border zones, were more restrictive than others in enforcing the regulations. For example, some did not allow truckers from other routes to operate within their service areas, even when transport was in short supply. Some centers also interfered with the assignment of cargo. These centers required truckers to queue (sistema de rol), and a roll-call system was used to match a request for service with the next trucker in line. Users and the truckers therefore did not negotiate the terms of the contract. Users alleged that the cargo centers contributed to the decline in quality services, since the user was obliged to accept the assigned trucker even with a prior bad experience or if the assigned vehicle was inappropriate in terms of capacity, age, design or the driver's experience in handling the product.

6.18 Similar regulations also existed in container movements for international cargo. SCT created Multimodal, a semipublic company, to be the sole freight forwarder, presumably to tap scale economies in the services for container movements, including packaging and transport of the cargo. In 1980, the Government decreed that any international traffic had to be validated by a Multimodal contract, before SCT issued the permit to authorize the operation. However, partly because of its monopoly, Multimodal did not handle container movements efficiently. Multimodal and the cargo centers also colluded; container services also had to be made with the cargo center of the area. The results of these practices were a system of surcharges and other payments that were higher than the official prices and very low standards of service. Table 6.2 illustrates the conditions at the ports of Veracruz, where cargo centers and Multimodal were influential, and at Guaymas/Hermosillo, where they were not. In the former, container traffic tended to be confined to the port area, thus foregoing the benefits of door-to-door delivery, which was a main advantage of this mode of transport.

Table 6.2: COMPARISON OF TRUCKING AND DELIVERY COSTS IN TWO AREAS IN MEXICO

Type of Cost	Veracruz/Mexico DF	Guaymas/Hermosillo
Trucking cost per km (40' container) (US\$)	\$1.36-2.07	1.16
Delivery port to door (days)	20	7
Door to door as % of total container movements (est.)	20%	80%

Source: "Mexico: Selected Issues in Transport," June 29, 1988, which contains a detailed study of containerization development, Multimodal and the cargo centers.

6.19 Specification of Service Quality and Penalties for Poor Service. The regulation specified a very limited set of allowable service levels and penalties for non-observance, provisions that further restricted the scope for negotiation between users and providers (RCE art. 106,107). The permitted transit times were very generous to truckers: one day for loading, one day for a trip of up to 200 km on paved roads, and one day for unloading. The penalties for delays of 1 to 5 days were a reduction of 5% in the tariff; for 5 to 10 days, 15% of the tariff; and for more than 10 days, a 30% discount (RCE art. 146). As such, for a trip from Mexico City to Cuernavaca (70 km) that takes up to eight days, the user needed to pay 95% of the official rate. On the other hand, if cargo was not claimed 48 hours after its arrival, the owner incurred storage charges (RCE art. 141).

6.20 The responsibility of the trucker for damaged or missing cargo was very limited. If the user paid only the tariffs for the cargo delivery and did not purchase insurance for the cargo, the trucker's liability was only MexP800 (or US\$.31) per ton of lost or damaged cargo, which provides very little incentive to take care of the cargo. Until January 1990, the shipper insured his cargo by paying a fee proportional to the declared value of the cargo, but the rate per unit value did not vary according to the type of product and the risks involved in transporting it. In January 1990, the rate of insurance became negotiable, but the limits set on the trucker's liability have not been changed.

6.21 Administered Prices. SCT set and adjusted official tariffs. Once adjusted, they tended to be fixed in the short term. Prior to 1989, the official tariff was not a maximum but rather the only price within a product category that could legally be charged. The pricing system allowed very little variation in the tariffs in relation to load factors, which were assumed to be 80%, a very high level relative to actual load factors since 1983. This provision discouraged the supply of trucking services on low density routes and at periods when actual load demand was low. The official rate structure also did not permit differences based on timeliness and did not change with seasonal conditions. Adjustments were made only on the basis of the overall level of inflation in the economy.

6.22 There were five classes of tariffs, each of which had the same fixed component and a differing variable component. The classification of products was influenced only to a limited extent by risk, fragility and difficulty of handling. Higher tariffs often applied to higher value goods, rather than to the difficulty of transport per se: gold was in the first category, silver in the second; fine crystal items were in the first, while most glass products were in the third category, etc. There was a 25% surcharge for unpaved road surfaces. In addition, a 25% surcharge was imposed on backhaul, although, since users could not prove payment, both sides ended up being charged. A 15% surcharge was also imposed on all imported cargo. The tariff contained a provision for large volume discounts, but SCT had to approve such arrangements, which the trucker in question published and made universally applicable. There was a discount of 8% on categories of goods that were subject to price controls. In addition, a legislated across-the-board discount of 50% applied to the Government, although this discount did not seem to have been applied.

6.23 Table 6.3 shows the breakdown of users that hired public trucking services to move products inland from the major seaports. Three parastatals, CONASUPO (grains), Sidermex (steel) and Pemex (petroleum) were clearly the dominant users of inland trucking from ports.

Table 6.3: MAIN USERS OF PUBLIC TRUCKING TO AND FROM PORTS

User	1980		1985		1986		1987	
	(tons)	%	(tons)	%	(tons)	%	(tons)	%
CONASUPO	3,215.4	35.5	5,001.7	8.0	2,024.7	24.5	2,024.7	25.2
Sidermex	2,554.7	28.2	3,564.6	27.0	2,602.5	31.5	2,765.3	30.1
PEMEX	729.7	8.0	1,262.7	9.6	1,009.2	12.2	872.9	9.5
Others	2,585.0	28.3	3,363.7	25.5	2,623.7	31.8	3,229.0	35.2
Total	9,064.9	100.0	13,202.7	100.0	8,260.1	100.0	9,184.7	100.0

Source: SCT, Coordinating Committee on Transport Programs, "Balance of the Execution of Transport Programs 1980-1988," 1988.

C. Assessment of the Impact of the Regulations

6.24 To the extent the regulations were enforced, they systematically reduced competitive pressure on the suppliers of trucking services. The system of route restrictions and concessions served as a barrier to entry, in effect making each designated route a regional oligopoly. Recent research conducted by SECOFI shows that 15 families controlled the main corridors and the transport of major products and that they divided the routes among themselves. The regulations not only helped create the oligopoly, but also facilitated its maintenance. To avoid competition among established companies, an elaborate system of controls attempted to ensure agreement on prices, a ceiling on installed capacity, establishment of a single "sales window" through which trucking services were allocated among users, and the merger of companies offering similar services. As mentioned earlier, the regulations resulted in higher prices and poor quality service. SECOFI estimated that these regulations led to a welfare loss of about 0.5% of GDP.

6.25 Rents Earned by Concessionaires. The black market for affiliation with an established concessionaire provides some evidence of monopoly rents. A survey of truckers carried out in 1984 showed that nonconcession-holding truck owners paid between 15% and 20% of their revenues to concessionaires on an ongoing basis for the right to affiliate themselves so that they could operate legally on a route. The fee was said to include a component for "administration costs." A similar survey in 1988 paid closer attention to the rents truckers paid to concessionaires, collecting data on 15 public trucking lines operating on routes that converged into the Mexico City area (Table 6.4). The average rent seemed to be 10% of revenues; seven people reported paying an additional fee for administrative expenses, seven others reported paying no such additional fee and also not receiving the service, while the remaining company, which did receive administrative services, reported paying 12% of revenues with no explicit separate administrative fee. It is surprising that the percentage tends to be equal across regions, although the rents themselves varied according to the profitability of the route (since it was based on a percentage of revenues collected).

6.26 The auction price of the right to be affiliated with a concessionaire has apparently fallen since 1984 but was still positive in 1988. The decline could be attributed to three possible reasons: (a) a decline in the overall profitability of trucking (costs have been rising faster than adjustments in the tariff) lowered the bids truckers made to obtain access to the concessions; and/or (b) vigilance on the part of the Federal Police became more lax after four years of economic recession, and underground truckers were more willing to take the chance of operating without documents and paying bribes when caught, rather than paying 15% of their revenues on a regular basis. (c) Alternatively, or perhaps at the same time, the deterioration of the trucking fleet affected installed capacity to the extent that concessionaires actually needed additional trucks to be affiliated with their line in order to continue service at normal levels; they therefore lowered the rent on concessions. Nevertheless, the continuing existence of a positive scarcity rent on the concessions issued by SCT, even during periods of low demand for trucking services, indicated some premium was derived from the regulatory framework.

Table 6.4: RESULTS OF INTERVIEWS WITH PROVIDERS OF PUBLIC TRUCKING SERVICES, 1988

Location of Respondent	% of Revenues Paid to Concession Holders	Administration Costs (% of Revenues or Fixed Amount)
1. Sonora and Baja California, Queretaro, Jalisco, Michoacan, Guanajuato	10	2
2. Cd. de Puebla and Tehuacan	8	Mex \$70 million/month
3. Jalisco and Baja California	10	1-4 <u>a/</u>
4. Noreste, Jalisco, Michoacan, Colima	10	- <u>b/</u>
5. Guadalajara and vicinity	8-10 <u>c/</u>	- <u>b/</u>
6. Centro y Sureste	12	-
7. Sureste	10-13 <u>c/</u>	- <u>b/</u>
8. Sureste	10	Mex\$50,000/month
9. Sureste	10	5%
10. Sureste	10	0-1% <u>a/</u>

Source: Figueroa y Ham (1988).

a/ According to the number of trucks operated by the permit holder, or by agreement.

b/ Where administration costs were not charged, services (e.g., security, etc.) were not offered.

c/ According to vehicle size and type of cargo.

6.27 Impact on Conduct. The entry restrictions provided licensed truckers with little motivation to improve their services. In the cargo terminals where users could not choose the truckers to haul their cargo, truckers did not feel accountable for delays or losses, whose costs the users

bore exclusively. The published rules of conduct, e.g., the service quality specifications, imposed low penalties for poor service and provided no non-market mechanisms to motivate increases in service levels. To some extent, unauthorized truckers and various measures adopted by users to receive better service, e.g., investment in own account vehicles, exerted some competitive pressure.

6.28 Private negotiations among truckers and users adjusted the prices for trucking services away from the official prices. As mentioned, the surveys indicated the existence of explicit discounts on the official rate as well as unauthorized operators who charged up to 30% below the official rate. Other users indicated that they had to pay prices above the official ones. Some price adjustments were implicit. Some users paid rates equivalent to using the full capacity of the truck, rather than the small percentage they actually required, whenever they needed more rapid delivery than the truckers' schedules allowed. This surcharge was a price response to their need for urgent delivery. On low cargo density routes, e.g., to disadvantaged areas, cargo delivery often took a few weeks, a delay that pushed implicit prices above the official ones. On the other hand, high density areas recorded higher than official tariff rates, particularly when there was a need for speedy service. Container movements were expensive because entry was restricted.

6.29 Truckers (and users) also expressed concern at the deterioration of the trucking fleet because of the lack of investment in recent years. While it is not surprising that Mexico's fleet has a higher average age than, say, a country such as the US (see Annex Table A6.5), much of the concern is over the rising average. The reasons could be varied. One may be the decline in demand brought about by the economic crisis of 1983, which has contributed heavily to the financial weakening of the industry. Regulations may have been a factor through their impact on incentives. Truck manufacturing has also been heavily protected through import restrictions that have significantly raised the domestic prices of trucks.

6.30 Productivity Indicator. There is some evidence that the productivity of trucking services declined between 1972 and the mid-eighties, when trucking regulations became more strictly enforced. A time series of the number of trucks per million pesos of GDP (constant 1970 prices) was taken as a proxy for productivity, allowing for technological developments that have led to increased vehicle size. From 1959 to 1973, a slight reduction from 1.4 to 1.2 is observed, an indication that, on average in 1973, 1.2 vehicles were required to generate a million pesos of GDP and that productivity had increased. After the trucking regulations began to be strictly enforced in 1973, the indicator rose to 1.8 in 1979 and 2.4 in 1984, the implication being a drop in productivity. The last increase was attributable to the declines in economic activity in 1982 and 1983 and the difficulty of simultaneously reducing the installed capacity in trucking by a proportionate amount. One caveat is that these indicators are not adjusted for quality or for changes in the types of trucks used. A change in quality would have to have been drastic, however, to reverse the trend. Therefore, these numbers demonstrate

a decrease in overall efficiency from 1973 to 1979, after the regulatory framework was strictly applied.

D. Conclusion and the Trucking Deregulation in July 1989

6.31 The trucking regulations prior to 1989 restricted entry severely and was hindering the development of trucking services. Concession and permit holders were the major beneficiaries of the system of regulations, and they maintained the oligopoly through limiting entry and competitive practices among truckers. The result has been poor levels of services, which have been documented above through interviews with industrial users. Concern was particularly apparent when trade liberalization advanced, when firms felt that the transport facilities would be inadequate to enable them to compete abroad, thus raising the need for deregulation.

6.32 On July 6, 1990, the Government signed an agreement with the private sector to modernize the road transport industry. On July 7, the decree containing new regulations governing trucking and inter-modal transport was approved, without necessarily changing the basic law governing the trucking industry. Future steps will focus on appropriate regulations for highway safety and environment. The major regulatory changes were the following.

6.33 Entry and Route Restrictions. The route restrictions have been removed. Truckers are now free to transport interstate cargo in Mexico. Since the law governing the trucking sector was not changed, however, trucking operations still require a concession. At the same time, these concessions are easy to obtain. SCT still gives them, but the Route Committees no longer advise SCT on who gets the concessions. Truckers need only prove their identity and vehicle ownership to get a permit. Permits to transport selected products have also been liberalized (except for chemicals, toxic products and explosives) and the administrative work simplified. Previously "unauthorized" truckers have the opportunity to register for a permit and legalize their operations. Own account operators may also transport third-party cargo. In addition, the Government eliminated all restrictions on loading and unloading.

6.34 Cargo Centers. The Government eliminated the mandatory use of cargo centers; the cargo centers no longer need to certify the bill of lading. Truckers no longer need to join cargo centers to obtain shipments; users are free to use the trucker of their choice. Entry into the provision of container transport services is free; users no longer have to transport containers only with Multimodal. By early 1990, about six new firms had already obtained permits for intermodal transport, and more applications were being processed. The Government also lifted the restriction on the use of international containers in transporting domestic cargo.

6.35 Administered Tariffs. In mid-1989, "official" tariffs were published with the new regulations; the new rates were regarded as maximums. Under this system, truckers and users were free to negotiate their rates provided the agreed rates did not exceed the maximum tariff. In January,

1990, the Government removed the tariff ceilings, thus freeing trucking services from any price control. The 15% surcharge on the transport of imported goods and the 25% surcharge on backhauling were also abolished. The regulations defining the time at which cargo has to be delivered at a particular destination have also been removed.

6.36 Truck Importation. In January 1990, the Government started the gradual liberalization of truck imports. Beginning in 1990, the producers of light and medium-size trucks may complement their domestic production with imports up to a certain limit, which will be removed after model year 1992. Imports of specialized trucks and tractor trailers will be allowed beginning with the 1991 model year and heavy trucks (more than 16,000 pounds) in 1992, provided the domestic price is higher than the equivalent foreign truck price corrected by distributor's mark up and import tariffs. Domestic producers of these items may import up to an amount equivalent to the value added of their production. In addition, the Government also eliminated the national integration requirements, the compulsory incorporation of components into the vehicles, and the national ownership requirement.

6.37 Safety and Environmental Standards. This is an important remaining area of potential reform. The Government recognizes this, and intends to complement entry and price deregulation with proper standards for safety and for environmental controls. The objective of the road safety policy will be to reduce the number of traffic fatalities and injuries. Another important concern is to reduce cargo damage, through raising the trucker's liability for damaged cargo. In environment, the major policy direction is the introduction of norms to control bus, truck, and automotive air and noise pollution. These norms will be implemented by private service stations. More detailed measures still have to be formulated.

6.38 To summarize, one of the most important areas of deregulation in Mexico in the past two years has been the trucking industry. The deregulation was rapid because of a few factors. Only a few concessionaires actually benefitted from the regulations; they gained the rents at the expense of other truckers. Furthermore, trade liberalization, which changed the patterns of demand for cargo transport, made a few routes very profitable, as compared with others. So when deregulation was proposed, the major portion of the concession holders did not oppose the change. The other factor conducive to deregulation was the decline in influence of the Chamber of Truckers, which was recently divided up into a few smaller and less influential chambers.

6.39 The preliminary results of the deregulation have been impressive. The number of permits issued between August 1989 and April 1990 was approximately three and a half times the number issued between 1986 and 1988. A large share has been attributed to the legalization of many previously unlicensed truckers, but the remaining share has been due to new entrants. The supply of trucking services has grown not only through new entry, but through more efficient use of existing capacity. For example, many own account firms have reduced the incidence of empty backhauls through third-party contracts. As mentioned, there has been significant entry into the deregulated freight forwarding and container movement service. There is also

a widespread perception that the quality of service has improved substantially. Finally, tariffs in real terms have declined by 20% on average (tariffs declined in the northern part of Mexico and rose on average in the southern part).

CHAPTER VII

REGULATION OF THE TELECOMMUNICATIONS INDUSTRY

7.01 As in many other countries, the recent interest in telecommunications in Mexico started with the realization that the industry had not realized its full potential to contribute to industrial growth. Its development has lagged behind the needs of its business users. A change in telecommunications policy is now seen as necessary to provide a regulatory framework that would stimulate greater efficiency and growth of the sector, as well as ensure the necessary technical safeguards. While the design of the policy would have to be reconciled with the Government's diverse objectives, the direction for change seems quite clear -- to introduce more market-oriented strategies for the sector, particularly with respect to pricing and competition in the sector, to promote growth.

7.02 This chapter discusses the nature and potential implications of telecommunications policy in Mexico. After a brief description of the sector's organization, it then describes the sector's recent development and highlights three principal issues: (a) pricing and tax policies; (b) regulatory structure; and (c) competition policy. The chapter concludes with a discussion of recommended features of a new regulatory framework and the Government's telecommunications program between 1989 and 1994.

A. Sector Organization

7.03 The SCT, through its Subsecretaria de Comunicaciones y Desarrollo Tecnológico (SCDT), has overall policy and regulatory responsibility for the telecommunications sector under the Ley General de Vías de Comunicación (1939). As provided for in the constitution, it also has a monopoly over several communications services, e.g., telegraph, satellite and radio. Telefonos de Mexico, S.A.C.V. (TELMEX), a 51% state-owned stock corporation, has the franchise to operate telephone services throughout Mexico (except for small rural communities jointly served by SCT and the state governments). Large users (both private and public, mainly in banking, energy, manufacturing, government and tourism) have their own networks to meet their specialized needs and, increasingly, to overcome the inadequacy of public services. There is also a sizable domestic telecommunications industry, with a local value added of about 60-70% of price; it supplies a major share of the equipment needs.

B. Sector Development

7.04 Although large in absolute terms, Mexico's public telecommunications system is rather modest relative to the population and GDP. Its density -- only about 5 telephone lines per 100 inhabitants -- is about average for Latin America and well below other newly industrialized economies (e.g., Korea at 16, Taiwan 22 and Singapore 31). Likewise, it is small compared with other countries of similar GDP per capita (e.g., Portugal 14 and Argentina 9).

7.05 The small relative size of Mexico's telecommunications system reflects a long decline in growth rates. Although in the early 1970s TELMEX expanded at 14% per annum in terms of the number of connected lines, the pace decreased to 11% in the late 1970s and 6% in the 1980s (5% in the last three years).¹ At the same time, the rate of growth of telephone traffic, which rose at about 23% in the early 1970s, slowed to 19% in the late 1970s and 8-9% in the 1980s.

7.06 Although expansion has been slow, there is still a large unmet demand. A TELMEX survey of 21 cities accounting for one-half of Mexico's population in 1986 indicated an unmet demand of almost 1 million telephone lines, or 37% of existing lines. On this basis, unmet connections countrywide may be around 1.5 million lines. The packet-switched data network of the Direccion General de Telecomunicaciones (DGT) (the sole public facility for the transmission of medium-speed business data) has only 1,200 ports, all fully used. These limited telephone and data facilities are highly congested and unable to meet the requirements of the traffic. New business services (e.g., access to time-shared data processing, data banks and electronic mail) lag far behind rapidly evolving needs. Users seeking to develop their own networks to overcome these shortages or meet specialized needs often have to wait more than one year for new leased microwave and satellite circuits (monopolies of DGT) or urban lines (TELMEX). Recently, SCT opened up the Morelos satellite to provide access to private user networks.

7.07 Service Quality. Although parts of the system perform relatively well and the initial software problems with the new digital exchanges reportedly have been largely overcome, users regard telecommunications services as of generally poor quality, with frequent breakdowns and long delays for repairs. The latter problem is particularly severe in the case of telephone service (e.g., lines may be out of service several months). Reportedly, over 1 million service problems per year (possibly 20% of the total) are settled through private arrangements between users and repair crews.

¹ The largest telecommunications operating company is TELMEX. It has a monopoly franchise to provide telephone service throughout Mexico and covers all urban centers (defined as places with over 10,000 inhabitants), rural places (over 2,500 inhabitants) and some smaller ones. With about 4 million telephone lines and 8 million telephones, TELMEX is the second largest telecommunications company in the developing world (after Brazil) and about the thirteenth largest worldwide. Some of its stock is traded on the Mexican stock exchange and in the US. In mid-1988 TELMEX was reorganized to focus more effectively on customer needs and business performance. This measure included a division of management responsibility for operations into three large regional units (northern, metropolitan and southern). TELMEX's board of directors, which includes representatives of the Government and private shareholders, is chaired by the Secretary of SCT. TELMEX employs about 45,000 people.

7.08 Financial Results. Despite inadequate capacity and low tariffs, the telecommunications sector is profitable. In 1987, only about 30% of DGT's operating revenues were needed to meet operating costs, while TELMEX made a profit of almost US\$200 million after taxes, equivalent to over 8% of stockholders' equity. In 1989, TELMEX made a profit of about US\$1 billion, largely because of the changes in tariffs during this period.

7.09 At the same time, the sector is acutely short of funds for expansion. TELMEX's internal cash generation contributed only about 30% of the funds invested in 1987 (compared with a typical level of about 50% in Bank-supported telecommunications programs in other countries), and the investments were themselves only about one-half what was necessary to prevent the gap between supply and demand from widening. State contributions of equity to TELMEX were expected to provide up to 25% of investment funds but in recent years have averaged only about 14%. Mobilization of funds from other sources, including domestic and foreign investors, has been precluded by the need to maintain the state's 51% share of equity.

7.10 Fiscal Impact. The telecommunications sector is a large net contributor of funds to the Government. In 1987, TELMEX transferred almost US\$500 million in taxes, interest, dividends and duties. In turn, it received only US\$150 million in new state equity. SCT's DGT operations (mainly telex) produced a net operating income of about US\$100 million, while receiving less than US\$30 million for new investment.

C. Pricing and Tax Policy

7.11 This section provides a preliminary overview and analysis of some of the important elements of the tariff and tax system affecting TELMEX before 1989. It also sketches a framework for a more detailed analysis of TELMEX's tariff system and the design of telecommunications tariff and tax policies.

7.12 The Tariff System and International Comparisons. Table 7.1 briefly summarizes some information about Mexico's domestic telephone charges in comparison with those of other countries (the rates in the US are listed, since it is an immediate neighbor and the most important potential competitor) as of January 1988. (Table 7.1 is based on several tables in Annex 6.) Annex Table A7.1 shows TELMEX's tariff system for telephone services in Mexico in 1988, while Annex Table A7.2 compares selected TELMEX tariffs with the corresponding averages in 16 countries with Bank-financed projects.² Annex Tables A7.3 to A7.7 provide more detailed comparisons of installation fees, monthly subscription rates, and local and domestic long distance telephone charges in Mexico and 75 other industrialized and developing countries. Annex Table A7.7 shows the sum of the charges for a fictitious annual "call basket" in these countries, chosen to obtain a uniform basis of comparison. Annex Tables A7.8 and A7.9 make the same comparison on the basis of purchasing power

² The tariffs shown in Tables A7.1 and A7.2 are producer prices. The user prices exceed producer prices because of the high telephone taxes. The current system of telephone taxes is discussed later.

parities and the number of working hours required to pay for the telephone charges in the various countries, respectively, rather than on the basis of nominal wages.

Table 7.1: COMPARISON OF DOMESTIC TELEPHONE CHARGES BETWEEN MEXICAN AND OTHER COUNTRIES, JANUARY 1988

	Range Among _____ Mexico ^a /		_____ USA ^a /		
	Countries	Absolute	Rank	Absolute	Rank
Installation fee	0-3,720	403	11	214	28
Annual subscription	6-378	145	30	308	5
Local call	0.003-0.326	0.017	73	0.147	21
3-min. 10 ⁰ km. local call		0.08-3.69		0.45	621.4020
Annual sum of charges	37-1,065	265	50	676	12

Sources: A.G. Siemens, "Study on National Telephone Tariffs Worldwide: A Detailed Comparison, Status in January 1988," A.G. Siemens, Munich, August 1988.

a/ The absolute figures are in deutschemark. The rank figures refer to 76 countries.

7.13 As Table 7.1 shows, Mexico's fixed charges in 1988 were relatively high, while the rate for local calls was very low and the rate for "domestic" long-distance calls was also relatively low by international standards. The rates include a large number of free, untimed local calls, a practice that presumably encourages excessive use of an already badly congested network.³ In early 1990, the reforms reduced differences in the tariff rates between Mexico and other countries.

7.14 No comparable data are available for charges for international calls, but on the basis of sample information, they tend to be higher in Mexico than in other countries. The American Telephone and Telegraph Company (AT&T) and TELMEX charge the same rate for calls between the US and Mexico independent of the origin of the call, but this parity conceals the difference

³ Most striking, however, is Mexico's first rank among 50 countries when comparing telephone charges in terms of the number of working hours required to pay for them. Clearly, telephone services are (still) very expensive for the average Mexican family. At the same time, in general, prices are not too high. Mexico has only 5 telephone lines per 100 inhabitants, and there is a large excess demand for telephone services at current prices. The case for a public telephone system that is accessible to the public vs. efficiency considerations needs further analysis.

between the low American and high Mexican charges. First, until recently, Mexican users paid substantially higher taxes (22%) on calls than did American users (3%). Second, Mexican users paid various surcharges. Third, the rates were much higher than the rates between countries of similar distance. For example, in late 1988, a full-rate, subscriber-dialed, three-minute call from New York to Mexico City cost \$4.95, while the same call to Vancouver cost \$2.21. Fourth, the rate actually consisted of a high Mexican and lower American component: of the \$4.95 for the 3-minute call from New York to Mexico City, AT&T's share was only \$1.26, the same as that for calling a town at the border, while TELMEX's share was \$3.69 (for the part from the border to Mexico City). The difference in charges for international calls from and to Mexico became even clearer when the rates for calls between Mexico and European countries were compared. That for a 3-minute call from Mexico City to London in 1988, for example, was \$12.45 (2,250 pesos = \$1), while a 3-minute call from London to Mexico City was only \$5.97 (L1 = \$1.80). In early 1990, Mexico's rates were adjusted to bring them closer to international levels.

7.15 New telephone subscribers are required to pay a high, non-refundable connection charge, as well as to purchase about US\$200 worth of TELMEX shares to cover the administrative costs of processing new connections and as a contribution toward the capital costs.⁴ This charge helps raise funds for investment and goes some way toward rationing the limited services. (Given the existing persistent shortages, this approach makes economic sense and is in line with successful practices in several other countries, such as Brazil and post-World War II Japan.)

7.16 Tariffs have not caught up with inflation. Table 7.2 shows TELMEX's tariff rates in real terms for the years 1970-88. The decline in the inflation-adjusted rate for long distance calls is striking. Although some decline in real tariffs is expected because of technological change, the fall has been too substantial to be attributed solely to technological change.

7.17 Cross-Subsidies. Although reliable cost data are not available, it is likely that the revenues from international calls (together with the fixed charges) subsidize the provision of local calls. Based on disaggregated cost data obtained from TELMEX for 1986 and 1988, a calculation of the cross-subsidy rates or the ratio of revenues to costs for each type of telephone service shows that local calls were priced substantially below and international calls substantially above the accounting average costs (Annex Table A7.10).⁵ Local long distance calls have been priced only slightly above

⁴ The shares are also priced at above market values.

⁵ In preparation for privatization, TELMEX is currently modernizing its accounting methods. It is suspected that the extent of the cross subsidy may not be as large as these calculations indicate if the ratio of revenues to incremental costs compared for the local and international calls. The ability of TELMEX to overestimate costs for some services may actually be an argument for regulation of TELMEX.

cost. The comparisons of Mexico's tariffs on local and international calls with those of other countries further support the presence of a substantial cross-subsidy.

Table 7.2: MEXICO -- TELEPHONE REAL RATES
(deflated by the CPI)

Year	Access	Basic Rent	Measured Service	Long Distance	
				National	International
1970	100	100	100	100	100
1980	81	41	39	43	52
1981	73	39	36	43	51
1982	61	29	27	34	85
1983	63	26	27	37	53
1984	80	41	35	36	67
1988	N.A.	N.A.	29	33	N.A.

Source: 1970-1984, Table 1 in Juan Ricardo Perez-Escamilla-Costas, "Telephone Policy in Mexico," working paper, University of California at San Diego, November 1987 (based on data from TELMEX and World Bank); 1985-88, Secretaria de Hacienda y Credito Publico.

7.18 There are a few caveats about the measurement of the magnitude of the cross-subsidies. First, an economic analysis of the efficiency of a certain set of prices must take economic or opportunity costs rather than financial or accounting costs as a benchmark and marginal costs rather than average costs. Furthermore, TELMEX's current accounting methods are inadequate, and may not reflect properly the average or incremental costs (and, therefore, the cross-subsidy) associated with each type of service. Second, for a multi-product firm the existence and magnitude of the cross-subsidies depends on the partly arbitrary allocation of costs to the various products.⁶ At best, the cross-subsidy rates calculated above can then only indicate the direction of the cross-subsidies.

7.19 Until 1990, the extent to which international long distance calls cross-subsidize local calls in Mexico was large and growing over time. The major concerns over this pricing structure were its negative impact on TELMEX's ability to generate revenues that would cover operating costs and investment needs, and its effect on user practices (such as reverse charging

⁶ See N. Hartley and P. Culham, "Telecommunications Prices under Monopoly and Competition," Oxford Review of Economic Policy 4 (2) (1988): 1-19. See also G.R. Faulhaber, "Cross-Subsidization: Pricing in Public Enterprises," American Economic Review 65(1975): 966-77.

in international calls).^{7,8} These observations highlighted the need of more cost-based pricing, and paved the way for the tariff reform introduced in early 1990. On the other hand, from a regulatory standpoint, it is recognized that economic theory does not reject outright pricing with cross-subsidies, as shown in Annex 4.⁹ Furthermore, a "practical" tariff structure that may have considerations other than efficiency pricing may support cross-subsidies to some extent. However, some rules in setting cross-subsidized prices may have to be followed, at least to minimize efficiency losses (see Annexes 4 and 5).

D. Telephone Tax System and Reinvestment by the Government

7.20 Other important issues for reforms include the system of telephone taxes and, more generally, the transfers of funds between TELMEX and the Government. As Table 7.3 shows, in 1988 residential and business users paid an average tax of 50% and 56% on their telephone bills, respectively, a tax that included a 15% value-added component.¹⁰ Annex Table A7.11 shows the rates of the value-added tax (VAT) and other taxes applied to telephone charges in 76 countries. Mexico had by far the highest rates during this period.¹¹ On the other hand, leased circuits (both by TELMEX and SCT) were subject only to the VAT, a situation that created an additional incentive for firms to set up their own networks and bypass the local one. In 1990, the telephone tax was converted to a tax on revenues of TELMEX.

7.21 TELMEX is a large contributor of funds (through taxes) to the Government. However, it also receives funds in the form of so-called

⁷ To be fair, the tariff structure (by providing insufficient incentives to increase capacity and upgrade quality) is only partly responsible for the state of the local networks. Another important factor is the decline in funds for investments from the Government (see Table 7 5).

⁸ AT&T did not provide data on reverse charging. However, according to a Federal Communications Commission report, "Trends in the International Telecommunications Industry, 1975-1987," October 1988, calls from the US to Mexico totaled 252 and 294 million minutes in 1982 and 1983, respectively, while calls from Mexico to the US totaled only 156 million and 144 million minutes in those two years. The difference indicates reverse calling or charging on a large scale. Unfortunately, the same report only contains aggregate data for Mexico and Canada for the years 1984-87, but the difference persists.

⁹ Op. cit., Hartley and Culham, p. 5.

¹⁰ This average is revenue-weighted. Since there is a relatively low tax rate on low revenue local calls, the tax rate on the average call and the tax rate on the average telephone bill will be even higher.

¹¹ A. G. Siemens, "Study on National Telephone Tariffs Worldwide: A Detailed Comparison, Status in January 1988," A.G. Siemens, Munich, August 1988.

"reinvestment" from the Government. Table 7.4 shows the flow of transfers for 1987.¹² The "net payment" shown in Table 7.4 is a measure that shows the fiscal impact of Government pricing and tax policies with regard to TELMEX, and fiscal neutrality could be one practical consideration for future price and tax reforms. The "net payment" measure does not properly reflect the impact of the tariff and tax system on TELMEX's finances and ability to accumulate funds for investments. Interest payments are costs from TELMEX's point of view and earned revenues from the Government's point of view; telephone and value-added taxes are indirect transfers from telephone users to the Government, and only income (profit) tax and dividends are direct transfers from TELMEX to the Government. Even income tax and dividend payments affect TELMEX's investment ability to the extent that they diminish retained profits.

Table 7.3: MEXICO -- RATES OF TAXES ON TELEPHONE SERVICES, 1988/89
(1)

	Telephone Tax	Value-Added Tax	Total Tax	Average Tax
Residential users				
Local call	60	15	84	
National long-distance calls	32	15	51.8	50.5
International long-distance calls	22	15	40.3	
Business users				
Local calls	72	15	97.8	
National long-distance calls	42	15	63.3	
International long-distance calls	22	15	40.3	
All users				52.1

Source: TELMEX.

7.22 The important considerations for TELMEX's ability to increase its investments are its operating revenues and the Government's reinvestment payments. The most important information concerning these variables is summarized in Table 7.5 (see also Annex Tables A7.9 and A7.10). Table 7.5 shows that operating revenues increased in real terms, but operating revenues (in real terms) per (telephone) line fell and are, despite their increases since 1985, still far below what they were in the late 1970s. Furthermore,

¹² It remains unclear what payments are included under "other taxes." While the author was given a figure of 204,000 million pesos, which seems exceptionally high, B. Wellenius (also of the World Bank) was quoted a figure of 94 million pesos for 1987 (cf. Annex 7 of his working paper, "Mexico - Overview of the Telecommunications Sector," September 1988). TELMEX's estimate for 1988 is 11 million pesos.

both operating and total costs rose much more rapidly and even increased per line (especially in the last five years).¹³

Table 7.4: TRANSFERS OF FUNDS BETWEEN TELMEX AND THE MEXICAN GOVERNMENT, 1987
(in million pesos)

Telephone tax		337,280.7
Income tax		99,217.7
Value-added tax on revenues	188,934.6	
Value-added tax on investments	(59,546.9)	
Value-added tax on other expenditures	(88,039.6)	
Net payment of value-added tax		41,348.1
Other taxes		204,040.2
Interest payments		57,450.1
Dividends		8,395.4
Total payments to the Government		747,731.5
Reinvestment from the Government		236,800.0
Net payment to the Government		510,931.5

Source: TELMEX.

7.23 While the Government's reinvestment payments more than doubled in real terms between 1976 and 1987, that trend hides how recent the steep increase has been. Whereas between 1979 and 1985 the payments fell by 44% (Annex Table A7.11), a rise in the last two years made it possible for TELMEX to raise its investments, which had essentially stagnated between 1975 and 1985 (Annex Table A7.12). The insufficient level of investments in those years will be felt for a long time, however, and the recent increase will only have an impact if it lasts and investments continue to rise in real terms.

E. The Regulatory Structure

7.24 The SCDT is responsible for regulating the telecommunications sector as well as for operating several telecommunications services provided by the state (including some reserved to the state under Article 27 of the Mexican Constitution). The SCDT employs some 8,000 people (Figure 7.1 shows a basic organizational chart).

¹³ Annex Table A7.10 shows that depreciation and maintenance costs increased much less than did old operating costs (in real terms) and that depreciation and maintenance costs per line decreased and remained stagnant, respectively. These trends may be an indication of the lack of investment in improvements of facilities. While the quality of much of the infrastructure is quite poor, more information about the exact composition of the various costs and components and were analysis are needed to establish a clear link between the depreciation and maintenance cost figures and the quality of the infrastructure.

Table 7.5: TELMEX'S OPERATING REVENUES AND GOVERNMENT REIMBURSEMENT, 1976-87^{a/}

	1976	1983	1987
Operating revenues (million pesos)	11,068	17,615	21,572
Operating expenditures (million pesos)	3,102	4,762	8,995
Total expenditures (million pesos)	6,814	9,096	15,233
Operating revenues per line (pesos)	6,160	5,468	5,413
Operating expenditures per line (pesos)	1,726	1,478	2,257
Total expenditures per line (pesos)	3,792	2,824	3,823
Reinvestment by Government (million pesos)	1,442	1,379	3,428
Investment in infrastructure (million pesos)	7,300	6,627	9,552

Source: TELMEX.

a/ All figures have been adjusted for inflation and are in 1978 pesos. More detailed information is contained in Appendix Tables A7.12 and A7.13.

7.25 Within the SCDT, the Direccion General de Normatividad y Control de las Comunicaciones (DGNCC) handles the regulatory functions: (a) issuance of operating licenses and franchises; (b) approval of telecommunications tariffs; and (c) planning, administration and monitoring of the use of the radio spectrum. The DGNCC is the outcome of a recent reorganization that separated SCDT's regulatory and operational functions and combined the regulation of telecommunications and radio/TV.

7.26 The SCT shares the regulation of prices of TELMEX with two other ministries: Finance and Public Credit (SHCP), which determines the tariff levels of public enterprises based on the budgetary needs of the Government and the growth requirements of the industry; and Planning and Budgeting (SPP), which participates because of TELMEX's transfers to the Government. This diffusion of responsibility has created coordination problems that have led to delayed price adjustments. It has also created a method of price-setting that is not related at all to market determinants of telephone services. SHCP sets the prices of other telecommunications services provided by the Government.

7.27 Until recently, the SCDT had direct operational functions that were mainly the responsibility of the Director-General of Telecommunications (DGT). Some of its services included mainly telex, a sizable (but antiquated) microwave network, the recently built Morelos domestic satellite system and a network of maritime coastal stations. Until a few years ago, DGT also had

monopolies in data transmission and leased circuit services. Other units within SCDT also had operating functions. Servicios a la Navegacion en el Espacio Aereo Mexicano (SENEAM) has a monopoly over aeronautical communication services. Servicio de Telereservaciones (SERTEL) has a monopoly over data communications for reservations. Two non-operating units are responsible for technology development (Direccion General de Desarrollo Tecnologico) and for R&D and training (Instituto Mexicano de Comunicaciones). Jointly with the state governments, the DGT also provided public telephones in rural areas with less than 2,500 inhabitants. Based on a Presidential decree issued in November 1989, SCT's operational functions were transferred to an autonomous state enterprise, TELECOMM. Government plans to privatize SERTEL directly.

7.28 The dual role of SCT as regulator and producer of telecommunications services created problems related to non-transparent rules for entry. Even though the SCT's operational and regulatory functions were carried out in different divisions, the same officials were responsible for business activities as well as the "rules of the game" under which others might compete with SCT. In fact, the entry rules have been unclear, and permits were given case by case, a system that was time-consuming. This arrangement led to inherent conflicts of interest and the belief that SCT promoted its own activities at the expense of overall sectoral development. For example, clear rules of entry were never established for the provision of new telecommunications-related services, even while SCT was the sole provider.

7.29 In its dual role SCT has also not been able to develop the "personnel" expertise necessary to carry out regulations effectively.

7.30 Developing clear rules of entry and regulatory expertise are becoming important because of increasing competition in the industry. One of the goals of the ongoing regulatory reform in telecommunications is to make the rules of entry transparent and create an environment that encourages firms to be responsive to changing conditions within the sector.

F. Competition Policy

7.31 Competition policy is a central element in the regulation of the telecommunications industry. The dominance by one or a few enterprises, usually publicly-owned, in the industry has been accepted in the past and has been justified by the importance of economies of scale, particularly in telephone services. The recent emergence of many telecommunications services, for example, value-added services, where economies of scale are not important, have made many countries introduce more competition in the industry. Even where economies of scale remain important, e.g., basic telephone services, many countries have also realized the advantages of a more competitive environment. For instance, there has been significant progress in competition in long distance services and the provision of dedicated networks. As in other countries, the Mexican Government has begun to reassess and to change the regulations in telecommunications that have largely limited competition.

7.32 In Mexico, two questions are fundamental to competition policy. The first is the role of the state in the actual provision of basic telephone

and other telecommunications services. The second is the appropriate regulatory policies to ensure competitive pressure for both public and private enterprises. This discussion addresses some of the major issues in competition policy in Mexico. It focuses on the entry rules relating to basic telephone and other telecommunications services and the regulatory guidelines governing supply (incumbents). The regulation governing the provision of telecommunications infrastructure is also touched on.

7.33 The provision of basic telephone services is viewed as a natural monopoly in Mexico and hence is to be provided by a monopoly. Because the state also needs to ensure that public telephone services are available in areas where the low volume of traffic may not induce private sector supply, the Government provides the infrastructure and has either to produce or license through SCT the provision of these services. Private entities are allowed entry only when granted a concession or license to do so. Concessions are contracts with firms to provide telecommunications services to the public for profit. TELMEX, a state parastatal since 1972, has had the sole concession to provide public telephone lines and "voice" transmission services in Mexico. Other concession-holders include TV companies, radio broadcasting states, etc. Licenses may also be issued to entities or persons to operate telecommunications facilities for their own use and for private network links. In many instances, as explained earlier, the SCT has provided the services itself.

7.34 The private lines and privately installed networks administered by the SCT could clearly complement the inadequate public lines provided by TELMEX, while at the same time providing competitive pressure. However, their ability to do so is lessened by the restricted access and rather nontransparent SCT guidelines. For instance, interconnected private lines may to some extent replace the public lines. However, SCT's regulations place substantial importance on the distinction between public and private line services. The SCT offers private lines and data services to users as well as some public switched data services; until recently, TELMEX offered only public switched voice services and was restricted from offering private line services. Under current SCT guidelines, users are allowed to connect their own subsidiaries to a leased private line but are largely denied access to other legal entities. Even the SCT expresses concern about connecting legally separate entities, which are under common legal control and grants, on only an ad hoc basis, the right of private line customers to connect their networks to their affiliated entities that are not commonly owned, such as dealers or distributors.

7.35 While more liberal access among public and private lines may lead to reduced revenues for TELMEX, there may be some advantages for this step. It would, for instance, create pressure to reform the current price structure for local and long distance calls, since private lines seem to be priced closer to costs than are public lines. TELMEX could also explore possible changes in the price structure of these network services, or even access charges to private networks.

7.36 As in many countries, whether users should be allowed to resell the services of their leased lines or installed networks is a contentious issue in Mexico. There seems to be some excess capacity, particularly among the large networks of large state enterprises and the newly installed networks that use the Morelos satellite. Resale of their services might be advantageous to small and medium-sized firms that may not be able to afford the fixed costs of installing the infrastructure. It may, like the networks, create pressure for price reform. Aggressive exploitation of the disparities between the rates of these private networks and TELMEX may be avoided by resales through a non-profit entity.

7.37 Prohibiting TELMEX from transmitting data through its lines is a quite obsolete restriction, since computer access through telephone lines has become widespread. Local exchange and long-distance services are already utilized substantially for facsimile services and inter-PC communications. However, current regulations do not explicitly acknowledge TELMEX's role in providing access to data. Under the telecommunications law under preparation, Government intends to allow TELMEX data transmission.

7.38 SCT has a monopoly over the provision of some value-added services in Mexico. (SCT's business activities are evident from its organizational chart, shown in Appendix Figure A7.1.). This monopoly clearly restricts competition, particularly since barriers to entry in the provision of "enhanced services" seem less, and scale economies less important, so that the prospects of competitive supply are higher. Among these services are reservations services to third parties (important to the travel and tourism sectors) and, until recently, pure remote access data processing services (although entrants still have to be licensed). Users complain of restricted access to information-related and data processing services.

7.39 One problem in regulating telecommunications services is the rather broad scope of value-added services, which makes them difficult to define: all-encompassing entry restrictions on telecommunications can apply to practically every information-based service. In fact, that scenario is true in Mexico.

7.40 Provision of the physical infrastructure for telecommunications services, e.g., coaxial or fiber optic cables or satellite services, is largely limited to TELMEX and SCT. There are no clear guidelines as to who may be authorized to provide infrastructure and under what terms and conditions. Other countries have allowed varying degrees of competition, with some success. Among the options are joint investments and joint ventures between public entities and the private sector.

G. Toward a New Regulatory Framework in Telecommunications Policy

7.41 It is recognized that Mexico will not be able to overcome the acute shortages in telecommunications services under the regulatory, licensing and organizational arrangements described above. While TELMEX's target to achieve 17 million connected telephone lines (or 30 million telephone sets) by the year 2000 would just about meet current unmet and forecast new demand,

reaching that target will require that the number of lines grow at about 12% per annum, well above the 6% average of the 1980s. TELMEX proposes investing about US\$8.5 billion in 1988-92. This level is feasible under current arrangements only with major real increases in tariffs and Government equity. Moreover, data and other more advanced communications services are needed as well. While the demand for these services is still small compared with telephone service, it is likely to grow at a much faster pace.

7.42 The major goals of regulatory reform would be a reduced role of the state in the provision of telecommunications services and the development of an appropriate and transparent regulatory framework. The major elements of such a regulatory reform in Mexico would include pricing and tax reforms, changes in the regulatory structure, and redefinition of competition policies. Complementary steps to regulatory change include redefining the roles of TELMEX and SCT in order to increase efficiency and encourage investment from private sources. The following discusses recommended features of a new regulatory framework and concludes with a description of the recently announced six year development program of deregulation, whose components are similar to those proposed in this report.

7.43 Pricing and Taxes. Tariff reform is a major concern in restructuring the telecommunications sector. Given the magnitude of the cross-subsidies among services, determining benchmark economic prices (i.e., marginal opportunity costs) for TELMEX's telephone services and adjusting them to arrive at a practical tariff structure is an important medium-term objective. As part of privatization, efforts are being made to collect all the information needed to determine the economic prices for TELMEX's services and to base TELMEX's future pricing policy and investment decisions on sound economic analysis.¹⁴

7.44 There are, however, good reasons for starting the tariff reform even before completing a thorough economic study. First, the distortions and efficiency losses resulting from the current tariff system, in particular the handicaps facing large business users, are so large that immediate reforms are badly needed. Second, the difference between present tariffs and the accounting average costs is so large that the direction of the economic cross-subsidies (deviations from marginal opportunity costs) is clear. Third, the direction of the necessary tariff reforms is indicated by the above-mentioned user practices to bypass the TELMEX services that are priced above cost (reverse charging, etc). Finally, an initial reform step could have signalling effects with immediate benefits. Given that tariff reform would proceed in stages, adjustments from the marginal costs will have to be made

¹⁴ The various steps in conducting a thorough tariff analysis and in determining the incremental opportunity costs of telecommunications services are described in M. Tomlinson, "Indonesia: Telecommunications Technical Assistance Project -- A Review of PERUMTEL's Tariff and an Outline for PERUMTEL's Tariff Analysis," Working Paper, World Bank, May 7, 1988. The general framework developed in that paper applies to the Mexican case.

later in any case. (Later adjustments should follow the general rules discussed in Annex 5.)

7.45 The Government initiated tariff reforms in January 1990. The necessary directions of the price changes for telephone services are quite clear, at least in the medium term. The international long distance rate was reduced (by around 35%), the local call and marginal call charges increased (by about 12 times), the monthly rent increased, and the installation fees reduced. As TELMEX is privatized, it will become important to adjust the tariffs periodically in keeping with the objective of promoting efficiency and ensuring an adequate level of profitability. The Government has made considerable progress in this area; it has decided to rely within the next four to five years on the price-cap mechanism, which has been used in the United Kingdom, the US, and other countries that have privatized their telephone companies. (Annex 5 discusses some of the general options for pricing regulation that have been used in other countries.)

7.46 Price reform cannot be separated from regulatory reform (discussed later). Changes in the regulatory policy for a public sector monopoly (or, potentially a private sector monopoly) such as TELMEX raise issues such as the possibility of predatory behavior, ease of entry and exit into the market, and the role of private fringe competition. Success of price reforms will depend on the resolution of these issues and corresponding changes in the regulatory framework and overall competition policy.

7.47 Until recently, taxation of TELMEX's services has also been an important issue. The main criteria for assessing the appropriateness of telephone taxes are their distortive impact on user choices and economic efficiency, equity considerations and the Government's revenue requirements. The price elasticity of demand for telephone services is relatively low and its income elasticity is relatively high.¹⁵ It has therefore been argued that, compared with other specific taxes on a variety of goods, telephone taxes cause relatively small efficiency losses and are relatively highly progressive. Thus, in choosing what specific goods to tax to collect a certain amount of revenues (that is, from a so-called "second-best" point of view), telephone taxes are "good" taxes. However, in comparison with income or value-added taxes, telephone taxes have a very narrow tax base, so that, compared with broadly based taxes, telephone taxes are "bad" (highly distorting). Given all the alternatives for raising the same amount of revenue (that is, from a "first-best" point of view), the Mexican telephone tax needs to be substantially reduced and, if necessary, replaced by higher income or value-added taxes. In January 1990, the Government replaced the tax on telephone users with a tax on the revenues of TELMEX (in addition to the VAT and income taxes). This tax allows for substantial investment credit and

¹⁵ The price elasticity itself changes depending on the policy. For example, the recent increase in local charges per call generated an unexpectedly large fall in the volume of calls.

may be deducted from income taxes, so it is expected that its financial impact on TELMEX will be negligible.

7.48 Raising the tariff rates of TELMEX will increase operating revenues, as proven by the recent tariff reforms. As TELMEX moves toward privatization, it is essential that planned tariff reforms boost operating revenues sufficiently to increase internal capital accumulation for investments in infrastructure, especially as the Government also phases out its contributions to investment. Revenue neutrality would be guaranteed by increasing the tariffs as tax rates and the Government's reinvestment payments are being reduced.

7.49 Regulatory Structure. The SCT should be exclusively a regulator, and not a competitor, in providing services. Until recently, its current dual role as regulator and producer of telecommunications services has resulted in conflicts of interest that are harmful to increasing competition, both domestic and international.

7.50 Government has already taken steps toward this direction. SCT has been divested of its operating functions, which are now with an autonomous state enterprise, TELECOMM. The subsequent step is to privatize the provision of these telecommunications services. In addition, even if the Morelos satellite remains publicly owned, marketing of its services could be privatized.

7.51 SCT should also be sole agency responsible for the regulation of telecommunications, which is currently dispersed among several entities. Price regulation, in which SCT, SHCP and SPP are currently involved, needs to be assigned to SCT. As TELMEX is privatized, this decision may be automatic since SHCP and SPP have been involved because TELMEX is a parastatal. SCT's role as a price regulator is important particularly because TELMEX will possess significant monopoly power over the private provision of telecommunications services.

7.52 With the redefinition and enhancement of its regulatory role (in price regulation and entry and competition policies), SCT's regulatory expertise needs to be developed for it to be effective. Setting pricing and competition policies, which requires substantial expertise and monitoring, is a preferable route only if the regulatory capacity is to be developed. Training of personnel within the SCT needs to be developed.

7.53 Competition Policies. A regulatory framework that stimulates competition and limited Government intervention is encouraged. The recently announced privatization of TELMEX is a positive step in this direction. Competition would press TELMEX to improve the quality of its services, reduce its costs and hasten the development of its networks. Allowing private competition in other telecommunication services will also help meet the demand for new telecommunications services, especially business services.

7.54 The following are suggested specific measures for liberalizing services and encouraging competition in Mexico: (a) eliminating the license

requirements for data base and information-processing services; (b) eliminating the restrictions on the provision of reservation and information services competing with SERTEL and other services offered by the SCT; (c) allowing SCT's private line users access to the local exchange services TELMEX offers (if necessary, subject to increased access rates to avoid adverse revenue consequences for TELMEX); (d) permitting TELMEX to move toward offering a full range of private network services, subject to both consistent standards to ensure the compatibility of network and to competitive safeguards to assure fair competition; and (e) allowing price competition by permitting the connection of private networks and the resale of voice and data services by non-profit or cooperative intermediates and users of private line circuits. The Government is currently reviewing these restrictions in the context of the planned deregulation. It has, for example, already announced plans to privatize SERTEL and, consequently, also open this market to private competition. The value-added services that a "privatized" TELMEX could offer are still under review.

7.55 Under a more competitive environment, additional policy decisions are also essential in defining the entry rules for the supply of services. Among the potential issues are whether to allow TELMEX to compete, and, if it is allowed, how the rules governing competition between TELMEX and other firms should be formulated. Experience in other countries has shown that dominant companies with scale economies may engage in cross-subsidization and predatory practices that are meant to keep the competition out. One major example has been the dominance of British Telecom and the failure of Britain to encourage competition in both basic telephone and value-added services because of British Telecom's further monopolization of the market once it became private.

7.56 New Investment from the Private Sector and Increasing the Efficiency of TELMEX. Additional funds expected from tariff increases and private sector investment from the privatization of TELMEX are essential to upgrade basic telephone services (such as the installation of a high-quality digital network for business users). Additional sources of funds may be drawn from (a) cooperative sharing and joint investment arrangements for small and medium users of the Morelos satellite system; (b) further investments by user groups in facilities that offer access to TELMEX; and (c) the pooling and trading of network capacity among other large users (PEMEX, Ferrocarriles, CFE) and between them and the operating companies. In other telecommunications services, opening entry to the private sector is a very important source of additional investment.

7.57 Under private ownership, TELMEX may also face less difficulties in operating as an efficient business than as a public enterprise. Under appropriate regulatory policies, it will also face less constraints on responding to changing market opportunities and on adapting technological change. With foreign ownership and participation, TELMEX may also be able to tap new technology and experienced management that would enhance its commercial operations.

7.58 Within TELMEX, steps are necessary to develop effective labor-management relations. Although not discussed above, the TELMEX-labor union

relationship has been a problem in firm restructuring, a situation common to the major parastatals and labor unions in Mexico. Until early 1989, TELMEX had approximately 66 convenios, or agreements, including a guarantee providing a fixed rate of growth of the work force. This rate of growth was higher than that of newly installed lines. Furthermore, the unions evinced considerable resistance to the staff redeployment and training that are normally required of an industry whose technology is changing rapidly. At present, only about five agreements exist, after intensive negotiations between the union and Government were conducted in preparation for the privatization of TELMEX.

H. The Government's Telecommunications Program, 1989-94

7.59 In 1989, the Government announced a program of reforms for the telecommunications industry that will be undertaken over six years. The objective is to encourage growth in investment in the industry. In the area of basic telephone services, it expects to increase telephone density from 5.3 lines per 100 inhabitants (1988) to 8.5 in 1994. The key features of this program are increased private sector participation and the development of an appropriate regulatory environment. Some of the important elements are the following:

7.60 Privatization of TELMEX The most important element of the program is the privatization of TELMEX. At present, the Government expects to transfer ownership to the private sector in 1991 as well as to start the sale of the remaining Government-held shares.

7.61 Pricing and Taxes Tariff reform has been given priority. As mentioned, TELMEX's tariffs were changed in early 1990, a measure that substantially reduced cross-subsidies and that will enable TELMEX to finance internally about 80% of its investment plans in 1990. More changes in tariffs are envisaged in the next few years.

7.62 Competition Policies Private sector competition will be widely encouraged in many telecommunications services. Among these areas are access of private user networks to the public network, cellular telephone services, equipment supply (fax, telephone and telex machines), provision of information services, and eventually international long distance voice and data transmission. TELMEX may be able to compete in these services, but under some restrictive terms, such as limiting the provision of value-added services to its subsidiaries.

7.63 Separation of SCT's Regulatory Role and its Operations SCT's operating functions have been transferred to a newly created state enterprise, TELECOMM. This enterprise will be subject to the same regulations as any competing private firm and will not receive further Government support. In addition, parts of TELECOMM's services (e.g., small packet-switched network and the telex service) may be privatized. Another operation that SCT used to handle, the telereservation services (SERTEL), will be privatized soon.

CHAPTER VIII

INDUSTRIAL MARKET STRUCTURE

8.01 The purpose of this chapter is to examine the structure of production in the manufacturing sector from the viewpoint of industrial organization. It examines how the size of establishments has changed since the early seventies and how these changes in organizational structure may have been associated with the policy regime.¹ In particular, the chapter discusses how some of the regulatory policies discussed in this report may have influenced the level of competition in the manufacturing sector, and how this was may have been translated into the prevailing market structure. This chapter's assessment is preliminary, however, and is constrained heavily by the status of the industrial census data.

8.02 This chapter shows that the level of industrial concentration, as measured by the four-plant concentration ratio (CR4), increased between 1970 and 1985, although it decreased slightly between 1975 and 1980. The largest increases in CR4 were observed in many industries that have been highly protected and regulated by trade and other industrial policies and where state parastatals have been important producers. Large firms also became more important in terms of production in manufacturing, whereas medium-sized and small firms became less important, between 1970 and 1980, although firms in general contracted after the 1982 crisis.

8.03 Cross-country comparisons also show that industries in Mexico tend to have a similar ranking by average plant and firm size compared with other countries, although in general they tend to have higher concentration levels than they do in developed economies. Deviations from the ranking were evident in some industries: basic metals, nonmetallic minerals, beverages, fertilizer, and transport equipment tend to have higher concentration levels. Most of these industries coincide with industries with large public enterprises in Mexico. Chemicals, printing, plastics and non-electrical machinery tend to have lower concentration levels. These industries were highly protected from imports until 1985, although domestic entry restrictions were not imposed, which may have encouraged more entry.

8.04 This chapter is organized as follows. Section I examines the market structure of the manufacturing industry, focusing on the concentration levels among firms and establishments and their changes over time. It also compares industrial concentration in Mexico with other countries. Section II

¹ The distinction between measuring size on the basis of establishment versus firm is important, because the former refers to the production unit while the latter refers to the marketing unit. Usually there is no one to one correspondence between them because a firm often operates multiple establishments. However, the concentration ratios as measured at the plant and firm level show a very high correlation.

establishes some links between the policy environment and the degree of market concentration.

A. Market Structure of Manufacturing Industries

8.05 Establishment Size and Changes Over Time The average size of establishments (or plants) increased from 28 to 39 workers between 1970 and 1980 and then fell sharply to 18 in 1983. There were two reasons. First, the average size of the large establishments increased from 638 to 796 workers between 1970 and 1980 and then declined to 674 workers in 1985. Second, the number of small manufacturing firms (1 to 5 employees) rose dramatically in 1985. Their percentage share in the total number of firms in manufacturing rose from about 55% to 77%, whereas their share in manufacturing employment more than doubled (Table 8.1). The overall reduction in the size of establishments in 1985 was largely a response to the crisis since 1982.

Table 8.1: DISTRIBUTION OF FIRMS BY EMPLOYMENT SIZE, 1970-85
(%)

Size Class	1970	1975	1980	1985
<u>Number of firms</u>				
1 to 5 employees	62.90%	59.17%	55.59%	77.21%
6 to 50	28.55%	30.99%	32.72%	17.24%
51 to 100	4.00%	4.37%	5.00%	2.36%
101 to 250	2.88%	3.32%	3.81%	1.89%
251 to 500	1.05%	1.28%	1.58%	0.76%
Over 501	0.66%	0.87%	1.31%	0.55%
TOTAL	100.00%	100.00%	100.00%	100.00%
<u>Share of Employment</u>				
1 to 5 employees	7.20%	5.57%	3.79%	9.79%
6 to 50	19.50%	17.26%	14.18%	15.75%
51 to 100	11.90%	10.80%	8.92%	9.27%
101 to 250	19.10%	18.02%	15.08%	16.29%
251 to 500	15.30%	15.74%	13.90%	14.77%
Over 501	27.00%	32.61%	44.13%	34.13%
TOTAL	100.00%	100.00%	100.00%	100.00%
<u>Share of Gross Product</u>				
1 to 5 employees	2.40%	1.88%	1.40%	3.01%
6 to 50	13.20%	11.28%	9.48%	11.73%
51 to 100	10.80%	9.63%	7.07%	8.59%
101 to 250	19.90%	19.26%	12.91%	17.48%
251 to 500	17.90%	17.66%	13.69%	17.15%
Over 501	35.80%	40.29%	55.44%	42.03%
TOTAL	100.00%	100.00%	100.00%	100.00%

Source: 1970 Manuel Gollas, "Estructura y causas de la concentración industrial en México," en Viviane B. de Marquez, Dinámica de la Empresa Mexicana, Colegio de México, 1979, 1975, 1980 and 1985 -- INEGI, National Industrial Census data.

8.06 The size distribution of firms varies across industries. The share of large establishments is highest in chemicals, metal and metal manufacturing, where production may be characterized by some economies of scale, and lowest in wood products, nonmetallic minerals and miscellaneous manufacturing. Textiles, leather and some food products are intermediate in size. In many of the industries, the analysis of technical concentration

(discussed later) and its changes, rather than size, indicates that the policy regime may have influenced plant sizes.

8.07 The share of large establishments in terms of production activities appears more important in Mexico compared with what existed in the Japanese manufacturing sector in the 1970s. Manufacturing firms with more than 100 employees accounted for 65% of employment and almost 75% of output in Mexico, while they accounted for only 45% of employment and about 60% of output in Japan. Mexico's industrial market structure in 1985 is similar to that of Korea in the early 1980s, as well as to Argentina in the mid-eighties. It is interesting to note that the policy regimes since the seventies in these latter countries were very similar: they emphasized the promotion of heavy intermediate industries and consumer durables.

8.08 This concentration of output and employment in large firms is very important for two reasons. First, it may increase the economy's vulnerability to shocks, in particular is concerned insofar as employment. However, another school of thought suggests that larger firms are better able to restructure rapidly than are smaller ones because they can make labor mobile within the firm. Second, it demonstrates the conflict in Government policy over the promotion of small and medium-sized enterprises while at the same time pursuing ambitious growth objectives, which requires strong performance by large production units. This conflict is particularly significant in the case of Mexico, where firms have a high degree of integrated ownership.

8.09 Plant Concentration. Technical concentration, measured here as the share in output of the largest four establishments, increased between 1970 and 1985. While it decreased in 1980, it rose sharply in 1985 (see Annex Table A8.1). The average four plant concentration ratio in 1985 was 54%, compared with 44% in 1970. Its distribution in 1985 also indicated generally high levels of plant concentration in the manufacturing sector. In 1985, out of 251 industries, 110 had concentration levels of 70%, while only 34 had less than 30%. The highest levels were observed in intermediates and capital goods, especially glass, nonferrous metals, iron and steel, fibers, automobiles, transport and household appliances. They were also very high in a few agroindustrials, notably canned fruits, alcoholic beverages, processed coffee, tobacco and cigarettes.

8.10 The largest increases in technical concentration between 1970 and 1985 were mostly among intermediates, capital goods and a few consumer goods (Table 8.2). During the seventies, concentration increased substantially in coffee processing, alcoholic beverages, soaps and detergents, and paper and fertilizers. Between 1980 and 1985, concentration levels rose in almost all industries, only declining in nine.

Table 8.2: CHANGES IN TECHNICAL CONCENTRATION, 1970-85

Direction of Change, 1970-85

Level of Concentration	Increasing	Constant	Decreasing
(CR4>50%)	Jellies, dairy products corn milling Tobacco Cigarettes Vegetable fibers Cotton blanket Coffee roasting Worsted yarns Other textiles Other clothing Apparel, leather Paper and paste Detergents Fertilizers Synthetic fiber Plastic products Porcelain Concrete Basic iron and steel machinery and equipment Electrical house appliances Electrical hardware Other electrical appliances Automobiles manufacturing Auto/truck bodies Other transport equipment Rum and vodka Cider Tractor manufacturing	Biscuits and pasta Coffee and tea Foods Starch Beverages Carpets and rugs Cork products Other paper Perfumes Explosives Tire Glass Ceramics Fiberbrick Asbestos Abrasives Iron containers Lead metallurgy Copper metallurgy	Petroleum refining Fertilizers Vegetable and fruits dehydrated Other foods Cotton fabric Wine Condiments Cornstarch Chocolate & cocoa Beer/malt beverages Spinning & knitting Bed sheets Dyes Batteries Plastics and resins Inks Animal oils Fiberglass Other glass Aluminum Metal furniture Wire/wire products Food machinery Office equipment Motels Motorcycles Agriculture machinery Nonelectrical machinery Communication equipment
Low (CR4<50%)	Plastics Lime Concrete Metal carpentry Nonmetallic minerals Sweaters Shoes Sawmills Tortillas Cement Metal products molding Meat and milk products Wheat milling Bakery products Vegetable oils Honey Fish and shellfish Cotton preparation Other paper products Basic chemicals Industrial gases	Wood and wood containers Carpentry Nonalcoholic beverages Pharmaceutical Printing Other metal products	Animal feeds Paints Metal furniture

Source: INEGI, World Bank staff estimates

of 45 subsectors. Substantial increases were observed in home appliances, corn meal, vegetable oil, plastics, sugar, automobiles, transport equipment and natural fibers. Industries whose concentration levels were increasing more rapidly also coincided markedly with industries whose initial levels of concentration were already high and that were also the beneficiaries of industrial promotion.

8.11 Firm Concentration. Firm concentration can be measured in terms of either market or aggregate concentration. Market concentration is measured in this report as the share in output of the largest four firms within a single market (defined here as the 4-digit industrial classification).² Although concentration per se is not a policy concern, policymakers view market concentration as a possible indicator of the degree of market power exercised by a few firms, especially if public policy inhibits entry and fosters noncompetitive behavior. Aggregate concentration is defined as the share of the largest 50 or 100 firms in total manufacturing sales. Aggregate concentration reflects the extent of total manufacturing activities controlled by a small number of firms. In this section, this concept is extended to include the concentration of ownership through conglomerates.

8.12 The average concentration ratio in Mexico is high compared with some industrialized economies but is relatively low compared with other industrializing countries. Table 8.3 shows that its average four-firm concentration ratio in 1980 of 48% was higher than the four-firm concentration ratio levels in Japan and the US in 1963. The ratio is low, however, compared with Turkey, Pakistan and Korea. It should be noted, however, that the four-plant concentration ratios in Mexico rose substantially in 1985, and firm concentration may have also gone up.

8.13 The pattern of industrial concentration is similar to that encountered in many other countries. Based on a sample of two-digit industrial categories, their rank orderings from the most concentrated to the least concentrated was similar between Mexico and a group of comparator countries (see Annex Table A8.2). Deviations in the rankings for Mexico and the comparator countries occurred in a few industries. Mexico's concentration ratios were higher in basic metals, nonmetallic minerals, beverages and transport equipment, while they were lower in chemicals, printing, plastics and non-electrical machinery. Direct comparison of the levels of concentration in Mexico and three countries -- the US, Argentina, and Indonesia -- verified these results.

8.14 In terms of the distribution of the concentration ratios across industries, Mexico seems to have more industries with highly concentrated market structures than did Japan or the US in 1963 (Table 8.4). About 43% of Mexico's industries had four-firm concentration ratios greater than 60% in 1980, accounting for about 35% of value added. Only about 19% of industries in Japan and 17% in the US in 1963 had four-firm concentration ratios greater than 60%, and they accounted for about 13% of production in Japan and 21% in the US. The four-firm concentration ratio in Japan and the US increased slightly in the seventies. On the other hand, Mexico's market structure is less concentrated than that of Korea in the seventies, where more than

² Alternative measures of firm concentration in specific markets usually include 3-5-firm concentration ratios, the Herfindahl index and entropy measures. The latter two measures use the sum of the squares of the shares of the individual firm's shares of production in the subsector.

industries with three-firm concentration ratios of more than 60% accounted for more than 60% of manufacturing output.

Table 8.3: MARKET CONCENTRATION IN SELECTED COUNTRIES

<u>Country</u>	<u>Year</u>	<u>Average of Four-Firm Concentration Ratios ^{a/}</u>	<u>Number of Industries ^{b/}</u>
Argentina	1984	43	172
Brazil	1980	51	119
Chile	1979	50	41
India	1984	46 ^{c/}	n.a.
Indonesia	1985	52	119
Mexico	1980	48	186
Pakistan	1985	68 ^{d/}	n.a.
Turkey	1976	67	125
US	1963	40	323
Korea	1981	62 ^{e/}	
Japan	1963	37	512

Sources: The figures for Argentina, Chile, India, Turkey, Indonesia, Korea and Pakistan, are from various World Bank publications. The figures for Brazil are from L. Willmore, "Determinants of Industrial Structure: A Brazilian Case Study," mimeo, 1988. The figures from Mexico are from ILET (1987).

a/ Percentage of total sales or output accounted for by four largest firms.

b/ To compare concentration ratios between countries requires using statistics with the same level of disaggregation (i.e., with the same number of industries). Despite similar four-firm concentration ratios, the degree of industrial concentration in Argentina, for example, appears to be much larger than in the US as the Argentine data are considerably more aggregated.

c/ Weighted by value of output for 1983/84.

d/ Average for spinning, weaving, polyester yarn, polyester fiber, fertilizers, automotive products, bicycle, and tractors.

e/ Three-firm concentration ratio.

8.15 Aggregate concentration, expressed as the participation of the largest 50 and 100 firms in manufacturing output, declined slightly in Mexico between 1981 and 1985 (Table 8.5). It is low compared with Korea in 1982 and high compared with the US in 1980.

**Table 8.4: INTERNATIONAL COMPARISON OF
FOUR-FIRM CONCENTRATION RATIOS**

Concentration Ratio	Argentina (1984)		India (1983)		Mexico (1980)		USA (1963)		Japan (1963)	
	Industries	Percent	Industries	Percent	Industries	Percent	Industries	Percent	Industries	Percent
0- 19	10	19.20	10	9.20	12	4.78	90	21.6	157	30.7
20- 39	59	34.30	9	8.20	56	22.31	161	38.6	142	27.7
40- 59	36	20.90	15	13.80	72	28.69	92	22.0	117	22.8
60- 78	27	15.70	15	13.80	51	20.32	47	11.3	50	9.8
80-100	17	9.90	60	55.00	60	23.90	27	7.83	46	9.0
TOTAL	172	100.00	108	100.00	251	100.00	166	100.00	512	100.0

Sources: Argentina and India, World Bank, México and US - INEGI, Japan, Uekasa, "The Theory of Industrial Organization," (in Japanese), Chikuma, 1982, p. 20.

**Table 8.5: SHARES OF LARGEST 50 AND 100 FIRMS IN MANUFACTURING
(%)**

Year	Mexico		Korea		Japan	
	50	100	50	100	50	100
1980						27.3
1981	30.8	35.9				
1982			37.5	46.8		
1985	29.8	35.5				

Sources: Mexico, Expansion; Korea and Japan, World Bank.

8.16 Conglomerates. Firm-level concentration ratios may underestimate market concentration to some extent because many of the firms are controlled by a few conglomerates. The 10 largest conglomerates in Mexico produced 20% of total manufacturing output until the mid-eighties, compared with 30% in Korea. The conglomerates declined slightly in importance in 1985, when they produced only 17% of manufacturing output, primarily because of the crisis that began in 1982. They reduced their operations substantially, although many maintained very diversified product lines.

8.17 Whereas the Government clearly sees advantages in terms of improved international competitiveness in having large, integrated firms, it is also concerned with the competitive behavior of the conglomerates. It has revised its industrial strategy that promoted their growth -- including through increased attention to small and medium-sized enterprises and a system of incentives that is not arbitrary and therefore less prone to concentrate on known large incumbents. These measures could dilute the role of the large conglomerates.

8.18 Parastatals and Multinationals Many of the industries with high concentration levels have as their largest firms parastatals and multinationals. In 1980, of 75 industries classified as highly concentrated (CR4>55%), 10 had parastatals as important producers and 23 had multinationals. While the share of parastatals in manufacturing output was modest, they were important producers of some intermediates, notably basic metals, tobacco, transport equipment, chemicals and pulp and paper. Multinationals were dominant producers in nontraditional consumer durables (automobiles, tires and electronic equipment) and nondurables (tobacco and beverages), and in many capital goods. However, their share of total production declined from 33% to 25% between 1970 and 1980. Private Mexican enterprises (mostly belonging to conglomerates) predominated in many traditional consumer goods and in other intermediate and capital goods industries.

B. Concentration and Entry Barriers

8.19 Market structure is an outcome of production characteristics that lead to natural entry barriers -- economies of scale, absolute cost advantages, product differentiation and reputation -- and policy-induced entry and exit barriers. Traditional interpretations of market structure equate the structure directly with the extent of competition. Modern industrial organization, however, recognizes that market structure is endogenous and is formed by the nature of production and how policies can inhibit competition and induce changes in market structure.

8.20 Several empirical studies relating the characteristics of production to the levels of concentration across industries showed that Mexico's technical concentration was positively related to scale economies, capital requirements and the degree of product differentiation.³ It was also higher where multinationals predominated, particularly so if the market share of the multinational was higher in its country of origin.

8.21 Cross-section studies of market structure and performance in other countries, e.g., US, Japan and Korea, documented that highly concentrated industries tend to have high profitability. However, in Mexico this relationship was weak during the period 1970 to 1985. The industrial organization literature suggests two explanations for the positive relationship. The structuralist approach suggested that the high profitability was generated by the exercise of market power of firms in highly concentrated industries. The efficiency argument, on the other hand, suggested that the dominant firms were simply superior to its competitors. In Mexico, the weak relationship between profitability and concentration between 1970 and 1985 may be partly attributed to the policy regime toward industry. In industries where parastatals dominated, concentration tended to be high,

³ Manuel Gollas, "Estructura y Causas de la Concentracion en Mexico," en Viviane B. de Marquez, Dinamica de la Empresa Mexicana, Colegio de Mexico, Mexico, 1979; Donaciano Quintero, "Estructura del Sector Industrial Mexicano en 1975," Banco de Mexico; Tovar Arnedariz (1986); and Wilson Peres (1983).

but profitability was very low or negative because of the regulatory and other systems of cross-subsidies. In some others, for example, basic metal products (including automobiles), which were very highly protected and often had concentrated market structures, capacity utilization was very low (especially in the mid-eighties) resulting in low, levels of profitability.

8.22 Many of the priority industries had high concentration ratios. This finding is not surprising to the extent that the Government chose priority industries that had large potential scale economies. On the other hand, many of these priority industries exhibited concentration levels that were far higher than what has been observed in other countries. Where parastatals were important producers, their access to financial and other subsidies enabled them to expand more than private enterprises, such as in the case of fertilizers, transport equipment, and basic iron and steel. In others, licensing requirements (including DFI rules) limited entry and encouraged market segmentation, such as in the case of automobiles, tobacco, beverages and mineral products. Within Mexico, these regulated industries also tended to have the highest concentration levels compared with other industries.

8.23 Between 1970 and 1980, many of the policies toward industry favored the development of large firms. In part for this reason, the average size of large establishments increased from 638 employees to 796. This period was characterized by growing effective rates of protection on selected intermediates, capital goods and consumer durables. Furthermore, fiscal incentives granted through the 1973 decree (Unidades de Fomento) offered tax incentives that explicitly encouraged large economic groups and firms. In 1979, the tax credits introduced were in practice given mostly to well-established large enterprises (23 large firms were awarded 74% of the tax credits). The policy environment also encouraged the growth of Mexican national firms and limited the entry of DFI. The share of multinationals in total manufacturing production declined during this period.

8.24 Many of the heavily protected industries in the seventies coincided dramatically with industries with the highest concentration levels. The highest concentration ratios were observed in food items, tobacco, alcoholic beverages, hard fiber, other textiles, basic chemicals, fertilizers, resins, glass, basic ferrous metals, automobiles and transport equipment.

8.25 Between 1980 and 1985, concentration levels increased dramatically, especially in heavily protected industries. The collapse of the domestic market and the exit of many medium-sized enterprises increased the concentration of output in the largest firms. The industrial strategy also concentrated on reducing the impact of the crisis on employment by focusing on restructuring the important manufacturing industries, especially their largest companies. The industrial programs and the other instruments of industrial policy were also geared toward this end. Thus, while the size of establishments and conglomerates declined while they were restructuring during this period, concentration still increased. The period thus was characterized by a general trend away from a competitive market structure -- especially as more medium-sized firms left the formal market.

8.26 In terms of domestic policy, trade liberalization and deregulation would exert more competitive pressure that would inevitably affect market structure, without necessarily invoking active antitrust laws. This strategy may be the best approach for public policy, since it is not at all clear that a Government should take a position on market structure based on perceived notions of the structure's impact on efficiency. Policymakers do not have the capability to predict what the optimum firm or plant size is for an enterprise. They can, however, reduce the tendency for industrial policies to favor selected large enterprises and to deter entry.

INDUSTRIAL PROGRAMS

1.1 The PRONAFICE outlined the need for explicit short-term strategies to promote and regulate private sector investment in selected subsectors. Those strategies provided the formal basis for the industrial programs to be implemented by SECOFI. Firms interested in availing of the incentives were required to register with SECOFI, who then formulates firm specific programs (Programas Integrales de Fomento). Industry (or sectoral) programs (Programas de Rama), which outlined the incentive framework for specific industries, were also implemented. While the original plan in 1983 was to develop sector programs for all priority subsectors, only four were developed for automotive, pharmaceutical, capital goods and microcomputers. Except for microcomputers, these post-1983 programs merely revised and integrated existing policies for those industries. A fifth program on the petrochemical industry was issued in 1986, but this was intended more to regulate the increasing privatization of the industry. This is discussed in the subsequent section. Meanwhile, firms with the priority industries -- electronic, food products, textile, shoes, furniture, cellulose and paper, capital goods, iron and steel and basic chemicals industries and transport -- continued receiving many of the industrial incentives as participants in the development programs.

1.2 Following is a more detailed description and analysis of the automobile, pharmaceutical and microcomputer programs, where QRs are still a predominant instrument.

1.3 The Automobile and Auto Parts Program. The Mexican government first promoted the automotive industry in 1929 with import protection. Subsequently, it introduced new policies in 1962, 1972, 1977 and 1983.¹ In 1962, multinational terminal producers were subjected to a 60% DCR as a means of stimulating a domestic auto parts industry.² In 1972, foreign ownership in the auto parts industry was limited to 40%. In 1977, the government established an intersecretarial commission on the automotive industry to oversee the increasingly complex set of regulations. The commission had the authority to approve new lines by incumbents, technology licenses and entry of new (auto part) firms. Entrants were not allowed to produce items already being produced in the domestic market.

1.4 Between 1970 and 1979, the domestic auto parts industry grew in real terms at an annual rate of 10.7%, led by joint ventures of foreign suppliers of the terminal multinationals (perhaps because foreign ownership in the auto parts industry was limited to 40%), which had the incentive to

1/ Mark Bennett, The Case of the Mexican Auto Parts Industry: Public Policy and Industrial Development. Westview Special Studies in Industrial Policy and Development, Boulder, Col., Westview Press, 1986.

2/ Engines were to be included in the domestic content, but the terminal producer was granted the right to produce only engines, and no other auto part.

promote these schemes because of the absence of a local auto part industry that could meet the DCRs. The number of firms grew until 1970. Then, between 1970 and 1985, only one firm entered the industry despite a growing domestic market. Production of specific auto parts was heavily concentrated in a few firms; at the product level, one firm accounted for about 60-80% of production.

1.5 The major objectives SECOFI set for the program in 1983 were to reduce the trade deficit of the industry and eliminate its subsidies, while at the same time increasing its exports. In 1982, the automotive industry accounted for almost half the trade deficit of the manufacturing sector and about 45% of its fiscal incentives (in 1980). The need to tap the export market was also seen as urgent, given that the automobile industry experienced its largest fall in production ever between 1982 and 1983. Table 2.3 in the text summarizes the existing provisions of the automotive program.

1.6 Between 1983 and 1987, the government reduced the anti-export bias of the terminal automobile industry, while increasing import competition in the auto parts industry. The DCRs for terminal firms were reduced to 30% for lines with at least 80% exports, and to zero for fully exported lines, in comparison with 60% for cars sold in the domestic market. Terminal producers could also offset 20% of their DCRs with auto parts they produced in their own maquila firms. In 1985, the government removed the restrictions on the number of product lines for exports of terminals. Meanwhile, the DCRs for autoparts firms remained at 60% for both exports and domestic sales. Autoparts producers, particularly the nationals, reported difficulties coping with reduced protection, unchanged DCRs, and a declining domestic market. Non-exporters reported very low capacity utilization rates--about 20%. Not surprisingly, most of the growth in auto parts exports during this period was accounted for by motors, which were produced largely by the terminal companies. In 1987, the government removed most of the QRs in auto parts, eliminated the mandatory parts list for the DCRs, and in 1988 the DCRs for exports of auto parts were reduced to 30%. This step was significant, since recent studies have shown that the previous levels of DCRs had increased the production costs of auto parts by about 50% over comparable products produced in the US. Producers of auto parts at the maquilas were not included in the program's policy regime.

1.7 The export performance of the automotive industry has been impressive since 1983. Exports of terminals rose from US\$340 million in 1983 to US\$1.7 billion in 1987, while exports of motors and parts rose from US\$500 million to US\$1.4 billion in 1987. While the role played by the industrial program in pushing exports is hard to isolate, it is clear that the 1983 program provided a stable policy regime for the sector and an explicit agreement between the industry and the government on how to deal with the adjustment problems caused by the crisis of 1982. Reducing the regulations for the export markets of automobiles provided an additional incentive.

1.8 Future policies for the automotive industry need to address some of the following problems. A key concern has been the incompatibility of

continued import protection in the industry with the overall policy of trade liberalization. Another problem has been the rather slow rate of technological change in the auto parts subsector, especially in light of the rather rapid rate observed internationally. On the consumer side, the biggest problem has been the high cost of domestic cars.

1.9 The Pharmaceutical Program: The first development program for the pharmaceutical industry was issued in 1978, followed by a major revision in 1983. The 1983 program sought to reduce the growing trade imbalance in the industry by substituting imports of raw materials (pharmaceuticals) with domestic production (see Table 2.3 in text for details of the program). Imports of pharmaceuticals, which had been subject to QRs, were virtually prohibited, while imports of raw materials were allowed only when domestic production could not cover domestic consumption. Five-year QRs were given to firms investing in the production of active ingredients, and these QRs could be renewed if domestic prices were set at internationally competitive levels. In 1985, the government removed the QRs on pharmaceuticals, but sanitary restrictions continued to inhibit imports. Overall, the program sought self-sufficiency, defined as domestic production of 98% of all pharmaceutical products and 60% of the active ingredients by the end of the program. Moreover, the program stated that exports should represent a minimum of 14% of the sales of pharmaceuticals and 30% of the active ingredients.

1.10 The program also sought to develop national firms in an industry that had been dominated by transnationals -- foreign-owned companies accounted for about 70% of sales in 1982. The program regulated incumbent and entering DFIs and prohibited foreign firms from acquiring established domestic Mexican-owned firms. In addition, new DFIs could not displace domestic Mexican production. Other regulations included: (a) institution of new production for imports, (b) export of a major part of production; (c) international competitiveness of production, and (d) location of new production outside Mexico City. National firms were given additional credit incentives and preference in public procurement.

1.11 The pharmaceutical program promoted domestic integration and technological growth by giving incentives to major pharmaceutical firms to invest in the production of active ingredients. These incentives were confined largely to domestic firms or firms with majority Mexican ownership. Financial support was proposed for such firms through NAFIN. Firms were required to spend 5% of their sales on R&D activities to enhance Mexico's technological capabilities in these chemicals by fostering a close linkage among R&D activities in Mexico and firms producing pharmaceuticals. The program reserved the production of biochemicals to the public sector primarily to carry out research at a commercial scale. In 1987, the government modified the law on patents to make pharmaceuticals eligible by 1992.

1.12 To service the growing public health requirements of the country, the government developed public procurement rules and price controls for basic pharmaceuticals. Public procurement was done through public bidding was limited to domestic firms, with preferential treatment to nationals. Price controls based on a cost-plus formula were set for the private

sector, and a system of reference prices for public sector purchases was imposed.

1.13 The government established norms for quality control and good manufacturing practices in pharmaceutical production. Annual inspections by the Ministry of Public Health and SECOFI to check on compliance with the set of GMP requirements were done to assure quality control, while the laboratories managed by the Social Security and the Ministry of Health had to approve new products on formulation. A decree in 1985 reinforced these standards and defined guidelines for establishing a National Registry of Pharmaceutical Firms and GMPs. It also provided guidelines for listing active ingredients on the packaging of pharmaceuticals to rationalize the number of brands and to facilitate enforcement of price controls. The decree set forth sanctions for non-complying firms.

1.14 The program has met few of its objectives, except that it has achieved most of the import substitution targets: by 1986, domestic firms supplied 99.6% of Mexico's pharmaceutical consumption and 60% of pharchochemical inputs. Although exports of pharchochemicals reached 30% of total production, the corresponding volume was relatively small. While the trade deficit of the pharmaceutical industry dropped, exports of pharmaceuticals were below expectations, reaching only 7% of domestic production. The program also provoked substantial protest from existing multinational companies, and there was very little support for the new investment initiatives in active ingredients -- only about \$50 million were invested in active ingredients over a period of four years. Interviews with the multinationals indicated their lack of compliance with the regulations.

1.15 The system of negotiated cost-plus pricing, which treated all products as generic, brought about large price distortions and evasion. SECOFI, which was responsible for approving the price increases, had very little technical expertise in cost assessment and was often slow and stringent in granting increases. Moreover, the increases approved generally lagged behind inflation by a large percentage. Often the industry raised prices without approval or simply reintroduced products under different brand names. These new products proliferated in the Mexican market.

1.16 Public procurement, which was done by the Ministry of Health, often involved direct purchases rather than public bidding, mainly because of a lack of competition among the eligible domestic firms. Further, the bidding mechanisms were usually not transparent and heavily favored the government purchasing agency.

1.17 The system of quality control and standards for the industry was not well-organized. The agencies enforcing the GMP and other regulations on quality often did not have the required technical expertise, a problem that frequently necessitated bureaucratic paperwork and numerous plant visits. The application of these standards penalized imports. In addition, Government agencies that purchased pharmaceuticals set their own standards, which at times did not coincide with those of the industry's.

1.18 The Microcomputer Program. The objective of the microcomputer program was to develop a domestic industry and reduce the dependence on imports. It also aimed at reducing the price differential of about 250% between domestic and US prices. Even though the program was never formally published, it was enforced under the administrative guidance of SECOFI, which required participating firms to register with it. The program established QRs for microcomputers, reduced the tariffs on parts not produced in Mexico, and used government procurement to favor national firms. Currently, parts are imported at tariff rates of 10% to 15%, although under rule 8, "kits" can be imported by participating firms at a 0 to 5% tariff. In addition, CEPROFI's were given. The regulatory measures included DCRs of up to 60%, a requirement that was later reduced to about 30-40%, as firms found compliance difficult. Firms were also required to compensate part of their imports with exports.

1.19 When the program started, only national firms were allowed to produce microcomputers in Mexico. In 1985, fully foreign-owned firms were licensed, with IBM a major entrant, followed by other major multinationals. Negotiation of these entries with the Foreign Investment was lengthy and often subject to non-transparent rules.

1.20 The government established regulations on the scale of enterprise operations and gave SECOFI the right to stop the operation of firms that did not meet an economic scale of production. To stimulate technological change, firms were required to spend 5% of sales on R&D.

1.21 The structure and growth of the domestic microcomputer industry seem to have been influenced by the trade policy regime and DFI policies rather than by the regulatory program. The industry, which used to be characterized by importers, now consists largely of assemblers and multinationals; many of both are not participants of the program. While the types of microcomputer firms that would have emerged without these policies is hard to predict, the relatively high domestic effective protection, brought about by nominal protection for finished microcomputers of 20% and for components and parts of 0 to 10% seems to have encouraged assemblers. Many of the multinationals that were exporting to Mexico established subsidiaries in Mexico after the trade policy change. On the other hand, microcomputer producers in the program avoided the DCRs by establishing subsidiaries that imported subassembled parts, which, upon minor adjustments, were counted as domestic content. One of the major complaints of producers has been the absence of local firms that produce appropriate parts. Exports have been attributed largely to multinationals, particularly IBM.

1.22 Firms seem to have underinvested in their operations even while enjoying high effective protection, mainly because the policies toward the industry were not certain. The industry contains many firms that have not achieved a size that takes advantage of scale economies, a situation common in the computer industry. Prices are at 25% higher than US prices a dramatic fall from the 200% price differential in 1982. Nevertheless, a recent study shows that the social costs of protecting the microcomputer industry, including the technical and allocative losses, amounted to 17-27%

of total industry revenues in 1985. The biggest losers have been consumers, while the biggest gainers have been Mexican firms in joint ventures with foreign companies.

CALCULATIONS OF MARGINAL EFFECTIVE TAX RATES (METRs)

2.1 The calculations of METRs are based on D. Dunn, "Analyzing Taxes on Business Income with the Marginal Effective Tax Rate Model," draft, World Bank, December 1988. This model uses a Lotus spreadsheet that specifies a hypothetical project that assumes a 10% real internal rate of return before taxes and then introduces taxes and calculates the after-tax rate of return. As noted, the METR is defined as the difference between the before- and after-tax rates of return as a percentage of the before-tax rate of return.

2.2 Annex Table 1 shows the basic model used to calculate METRs for the Mexican 1989 tax system. The main modifications with respect to the Dunn model are that the wealth tax base is adjusted to the Mexican definition and the wealth tax is creditable against the CIT and is effective after two years of the beginning of operations. The CIT rate is adjusted by WPS, and dividends are not deductible but are taxed at 10.0%. This basic model is then modified to capture the tax credits on investment in Mexico by introducing a tax credit rate of 30% for the project and by assuming that the credits are fully redeemable, because the CEPROFIs are negotiable papers that can be credited against any federal tax. The basic model is then modified to capture expensing of the PVD alternative to normal depreciation along the lines suggested in the Dunn paper.

2.3 Annex Table 2 shows the basic model used to calculate METRs for the Mexican 1987 tax system. The main difference with the 1989 tax system is that dividends are deductible at the firm level and afterwards are taxed at a 55.6% rate (including the effect of WPS). The main modification to the Dunn model is a consistency modification that subtracts deductible proposed dividends of ordinary taxable income only if they are positive.

b

Table 1: GENERAL METR MODEL
(Tax System, 1989)

SPECIFY INVESTMENT AND TAX TREATMENT:

Original Investment	100.00	TAX ON INCOME:		TREATMENT OF LOSSES & CREDITS:		IMPORT TAXES:		RESULTS:	
Land	10.0%	Tax Rate	38.9%	Full Loss Offset	0 Yes=1	Building		Rates of Return (ROR)	
Building	40.0%	Surtax Rate	0.0%	Carry-Over Losses	1 Yes=1	% Imported	0.0%	Normal Before-Tax ROR	10.0%
M&E	40.0%	Surtax Years	0	Index COL?	1 Yes=1	Import Tax Rate	0.0%	Real Before-Tax ROR	10.0%
		Min Tax (% of rev)	0.0%	Rate of Indexation	0.0%	Exemption Rate	0.0%	Nominal After-Tax ROR	5.5%
		Min Tax Inc (% rev)	0.0%	Eligible Years	30	Exemption Period	0	Real After-Tax ROR	5.5%
		MinTaxInc(% assets)	0.0%	Forward Years	5	M&E			
				Exempt Years	0	% Imported	0.0%		
Replacement Inv.?	1 Yes=1	Deduct Depreciation?	1 Yes=1	Credits Redeemable?	0 Yes=1	Import Tax Rate	0.0%	Effective Tax Rate	45.0%
		Index Depreciation?	1 Yes=1	Carry-Over Credits?	1 Yes=1	Exemption Rate	0.0%		
OPERATION:		Adjust Inv for Lag	1 Yes=1	Index CDC?	1 Yes=1	Exemption Period	0		
Real Before Tax ROR	10.0%	Rate of Indexation	0.0%	Rate of Indexation	0.0%	Vehicles			
Wages as % of OpInc	0.0%	(=Infl Rate, if Fully Indexed)		Eligible Years	30	% Imported	0.0%		
Materials as % of "	0.0%			Forward Years	30	Import Tax Rate	0.0%		
Operating Period	10	Deduct Interest Paid:	1 Yes=1	TREATMENT OF DIVIDENDS:		Exemption Rate	0.0%		
RE % of After TaxInc	0.0%	Index Interest Paid?	1 Yes=1	Deduct Dividends?	0 Yes=1	Exemption Period	0		
% Sale Year Proceeds	0.0%	Rate of indexation	0.0%	TaxRate on Dividends?	10.0%	Imported	0.0%		
Used to Purchase Equity		Index Interest Rec?	1 Yes=1	Corp Tax Credit	0.0%	Import Tax Rate	0.0%		
		Rate of Indexation	0.0%	Corp Tax Offset	0.0%	Exemption Rate	0.0%		
FINANCING:				Limit (% of Divd)	0.0%	Exemption Period	0		
Debt (% of Orig Inv)	0.0%	TREATMENT OF CAPITAL GAINS:		OTHER TAXES:					
Constant D/E?	0 Yes=1	Cap Gains Tax Rate	38.9%	TaxRate on R.E.	0.0%				
Years Interest Only	0	Cap Gains Option	3	Excess Profits Tax	0.0%				
Loan Term	10	Index CG Base	1 Yes=1	NormProf (% of Divd)	0.0%				
Amount Borrowed	0.00	Capital Loss Offset	1 Yes=1	Wealth Tax	2.0%				
Loan Payment	0.00	Balancing Adj Option	0	Pers. CG Tax Rate	0.0%				
Interest Rate	10.0%			Index Base?	0 Yes=1				
Inflation Rate	0.0%	Options for Cap Gains & Bal Adj:		Rate of Indexation	0.0%				
		0. No Tax on CG (or Bal Adj)							
		1. Sale Price of assets (SP)							
		2. SP-Original Costs (DC)							
		3. SP-DC adj for depr allows (AdjBas)							
		4. Min (SP.DC)-Adj Bas							

Depreciation:

	Initial Allow	Initial Yr	Final Yr	AdjBase?	Depr Rate	Depr Life	Switchovr	Rate of EcDepr
Building	0.00%	0	30	0	1	3.60%	20.0	3.60%
M&E	0.00%	0	30	0	1	12.25%	10.0	12.25%
Vehicles	0.00%	0	30	0	1	30.00%	5.0	30.00%
	0.00%	0	0	0	0	0.00%	0.00	0.00%

Str Line=0
Decl Bal=1

INVESTMENT INCENTIVES:

Investment Deductions:	Initial Yr	Final Yr	Adj Bases?	Investment Credits:	Initial Yr	Final Yr	AdjBases?	Tax Holiday:
Project	0.00%	0	0 Yes=1	Project	0.00%	0	0 Yes=1	Exempt Per. 1 (Yrs) 0
Land	0.00%	0	0	Land	0.00%	0	0	Exemption Rate 0.0%
Bld	0.00%	0	0	Bld	0.00%	0	0	Exempt Per 2 (Yrs) 0
M&E	0.00%	0	0	M&E	0.00%	0	0	Exemption Rate 0.0%
Veh	0.00%	0	0	Veh	0.00%	0	0	

Table 2: GENERAL METR MODEL
(Tax System, 1987)

SPECIFY INVESTMENT AND TAX TREATMENT:

Original Investment 100.00
Land 10.0%
Building 40.0%
M&E 40.0%
Vehicles 10.0%

TAX ON INCOME:
Tax Rate 38.9%
Surtax Rate 0.0%
Surtax Years 0
Min Tax (% of rev) 0.0%
Min Tax Inc (% rev) 0.0%
MinTaxInc(% assets) 0.0%

TREATMENT OF LOSSES & CREDITS:
Full Loss Offset 0 Yes=1
Carry-Over Losses 1 Yes=1
Index COL? 1 Yes=1
Rate of Indexation 0.0%
Eligible Years 30
Forward Years 5
Exempt Years 0

IMPORT TAXES:
Building
% Imported 0.0%
Import Tax Rate 0.0%
Exemption Rate 0.0%
Exemption Period 0

RESULTS:

Rates of Return (ROR)
Nominal Before-Tax ROR 10.0%
Real Before-Tax ROR 10.0%
Nominal After-Tax ROR 4.4%
Real After-Tax ROR 4.4%

Replacement Inv.? 1 Yes=1

Deduct Depreciation? 1 Yes=1
Index Depreciation? 1 Yes=1
Adjust Inv for Lag 1 Yes=1
Rate of Indexation 0.0%
(=Infl Rate, if Fully Indexed)

Credits Redeemable? 0 Yes=1
Carry-Over Credits? 0 Yes=1
Index CDC? 0 Yes=1
Rate of Indexation 0.0%
Eligible Years 30
Forward Years 30

M&E
% Imported 0.0%
Import Tax Rate 0.0%
Exemption Rate 0.0%
Exemption Period 0

Effective Tax Rate 55.8%

OPERATION:

Real Before Tax ROR 10.0%
Wages as % of OpInc 0.0%
Materials as % of " 0.0%
Operating Period 10
RE % of After TaxInc 0.0%
% Sale Year Proceeds 0.0%
Used to Purchase Equity

Deduct Interest Paid: 1 Yes=1
Index Interest Paid? 1 Yes=1
Rate of indexation 0.0%
Index Interest Rec? 1 Yes=1
Rate of Indexation 0.0%

TREATMENT OF DIVIDENDS:

Deduct Dividends? 1 Yes=1
TaxRate on Dividends? 55. %
Corp Tax Credit 0.0%
Corp Tax Offset 0.0%
Limit (% of Divd) 0.0%

Vehicles
% Imported 0.0%
Import Tax Rate 0.0%
Exemption Rate 0.0%
Exemption Period 0

FINANCING:

Debt (% of Orig Inv) 0.0%
Constant D/E? 0 Yes=1
Years Interest Only 0
Loan Term 10
Amount Borrowed 0
Loan Payment 0
Interest Rate 10.0%

TREATMENT OF CAPITAL GAINS:
Cap Gains Tax Rate 38.9%
Cap Gains Option 3
Index CG Base 1 Yes=1
Capital Loss Offset 1 Yes=1
Balancing Adj Option 0

OTHER TAXES:

TaxRate on R.E. 0.0%
Excess Profits Tax 0.0%
NormProf (% of Divd) 0.0%
Wealth Tax 0.0%
Pers. CG Tax Rate 0.0%
Index Base? 0 Yes=1
Rate of Indexation 0.0%

Inflation Rate 0.0%

Options for Cap Gains & Bal Adj:
0. No Tax on CG (or Bal Adj)
1. Sale Price of assets (SP)
2. SP-Original Costs (OC)
3. SP-OC adj for depr allows (AdjBas)
4. Min (SP,OC)-Adj Bas

Depreciation:

	Initial	Allow	Initial Yr	Final Yr	AdjBase?	Depr Rate	Depr Life	Switchovr	Rate of EcDepr
Building	0.00%	0	30	0	1	3.60%	20.0	0	3.60%
M&E	0.00%	0	30	0	1	12.25%	10.0	0	12.25%
Vehicles	0.00%	0	30	0	1	30.00%	5.0	0	30.00%
	0.00%	0	0	0	0	0.00%	0.00	0	0.00%

Str Line=0
Decl Bal=1

INVESTMENT INCENTIVES:

Investment Deductions:	Initial	Yr	Final	Yr	Adj	Bases?	Investment Credits:	Initial	Yr	Final	Yr	Adj	Bases?
Project	0.00%	0	0	0	0	Yes=1	Project	0.00%	0	30	0	Yes=1	
Land	0.00%	0	0	0	0		Land	0.00%	0	0	0		
Bld	0.00%	0	0	0	0		Bld	0.00%	0	0	0		
M&E	0.00%	0	0	0	0		M&E	0.00%	0	0	0		
Veh	0.00%	0	0	0	0		Veh	0.00%	0	0	0		

Tax Holiday:
Exempt Per. 1 (Yrs) 0
Exemption Rate 0.0%
Exempt Per 2 (Yrs) 0
Exemption Rate 0.0%

TAX CREDITS ON INVESTMENT AND EMPLOYMENT

3.1 From 1940 until 1979, tax incentives became progressively more important as an instrument to promote import substitution. However, as the Government introduced more fiscal instruments with varying objectives, conflicts arose not only among the implementing agencies but also in terms of the objectives of the various policy measures (e.g., trade). Furthermore, the diversity of the measures and their lack of transparency led to poor implementation, a bias toward large firms and firms in metropolitan areas, use of capital-intensive techniques and use of imported rather than domestic capital equipment.¹

3.2 The above problems led to a major reformulation of the fiscal incentive scheme in the industrial plan of 1979. The Government reconciled the objectives of the industrial promotion program and the tax credit schemes, which previously operated separately. It introduced the CEPROFI system, which consisted of a package of tax credits for the promotion of investment and employment in priority industries and for functional intervention (basic products, technology development and pollution control). The 1979 decree also incorporated priority regions, and the CEPROFI system was designed to foster balanced regional development by granting more incentives to these regions and by curtailing incentives to metropolitan areas. Annex Table 3 shows the tax credit rates for investment by priority sector and region. Subsequent changes introduced tax credits for agriculture, tourism, mining and other activities and promoted the operation of commercial centers in border areas.

3.3 Changes to the decree were introduced in 1986, mainly to increase the tax credits for employment and investment, as well as to raise the tax credit base for employment creation. Additional tax credits were provided for micro-enterprises and the restructuring of industrial plants hit by the recession. These changes are reflected in Annex Tables 3 and 4. In December 1987, the Government suspended the majority of the CEPROFIs as part of the Economic Stabilization Program. The remaining ones apply to agriculture and small and micro-enterprises.

3.4 The CEPROFIs became the single most important fiscal incentive in the 1980s, accounting for nearly half the revenue foregone as a result of fiscal incentives during this period. The amount of CEPROFIs given out declined drastically after 1982, in conjunction with the contraction of the domestic market.

^{1/} Op. cit., Report No. 7215-ME.

3.5 Priority sectors received about 75% of the CEPROFIs in the 1980s, with two major intermediate goods, basic metals (mainly iron and steel) and non-metallic minerals (mainly cement), accounting for 50% of them (Annex Table 5). Processed foods, chemicals and some capital goods industries were the other major recipients. Data prior to 1985 show that a large percentage of the tax credits went to public enterprises and large private firms. For instance, between 1979 and 1981, eight firms captured 50% of the value of the CEPROFIs given during this period. Most of these eight firms were producers of cement and basic metals, as well as parastatals.

3.6 The distribution of the CEPROFIs was roughly proportional to the regional structure of industry during the early 1980s. Their value and the number of beneficiary firms per state were roughly proportional to the GDP and number of establishments in each state. One of the few outliers was the state of Michoacan, which, although it accounted for only about 2.5% of GDP in 1985, received 20% of the value of the CEPROFIs between 1983 and 1985. The reason was that SICARTSA, a public producer of iron and steel located in Michoacan, received CEPROFIs.

3.7 The allocative impact of the CEPROFIs has been studied in earlier Bank documents.² To summarize the results, the subsidy element of the tax credits on employment and investment was large, resulting in strongly negative effective tax rates for firms and a high incidence of projects with negative social rates of return. The effective tax rates when the CEPROFIs were included also showed a higher variance across sectors, with substantially higher effective subsidies to some sectors at the expense of others. This report verifies the same results for effective tax rates when the CEPROFIs are integrated with the 1989 tax system.

3.8 In sum, the CEPROFIs were distributed in a way that favored a few large firms and industries. Even while they were essentially distributed to priority sectors, the criteria for the distribution were not clear, primarily because only a few within the priority sectors received the benefits. Parastatals were clearly favored. Finally, the CEPROFIs seem to have reduced effective tax rates such that socially unprofitable projects were carried out.

2/ Op. cit., Reports No. 4313-ME and 6215-ME.

**Table 3 : A COMPARISON OF TAX CREDIT RATES OF INVESTMENT^a
AND DOMESTIC SALES (1979^b AND 1986)
(%)**

Zones Beneficiaries	I Maximum National Priority	II Maximum State Priority	III		Rest of the Country
			III.A Controlled Growth Areas	III.B Consolidation Areas	
Priority Industries:					
Category I	30 (20)	20 (20)	None (None)	None (10)	15
Category II	20 (15)	15 (10) ^c	None None	None (10) ^c	10 (10) ^c
Small Industry	30 (25)	30 (25)	None (None)	20 (25) ^c	20 (25) ^c
Micro-industry ^d	40 (25)	40 (25)	None (None)	30 (25) ^c	30 (25) ^c
Special Regime for the Acquisition of Domestic Machinery and Equipment	10	10	10	10	10
Capital Goods (Including Computers)	(15)	(15)	(15)	(15)	(15)
Parts and Components	10 (5)	10 (5)	10 (5)	10 (5)	10

An additional 30% is granted for investment initiated before June 30, 1987.

Priority Industries, Category I include agroindustries, iron and steel, capital goods and pharmaceuticals.

Priority Industries, Category II include selected non-durable and durable goods and intermediate goods.

^{a/} According to "Tax Incentives Decree to Promote Employment, Investment in Priority Industries and Regional Development, January 22, 1986.

^{b/} The rates for the decree of March 6, 1979 are shown in parentheses.

^{c/} Capacity expansion.

^{d/} Included under small industry in the 1979 decree.

Table 4 : A COMPARISON OF TAX CREDIT RATES ON EMPLOYMENT¹
1979² AND 1986³

Zones Beneficiaris		I Maximum National Priority	II Maximum State Priority	III		Rest of the Country
				III.A Controlled Growth Areas	III.B Consolidation Areas	
Priority Industries	Category I	30% (20%)	20% (20%)	None (None)	None (20%)	15% (20%)
	Category II	20% (20%)	15% (20%)	None (None)	None (20%)	10% (20%)
Small Industry		30% (None)	30% (None)	None (None)	(20%) (None)	20% (None)
Micro-Industry ^{4/}		40% (None)	40% (None)	None (None)	30% (None)	30% (None)
All Industries		(None) (20%) ^{5/}	(None) (20%) ^{5/}	(None) (None)	(None) (20%) ^{5/}	(None) (25%) ^{5/}

(An additional 30% of the specific rate for employment generated before June 30, 1987).

NOTES:

- 1/ A once-and-for-all incentive for new employment generated through investment.
- 2/ The figures corresponding to 1979 are shown in parenthesis. In 1979 the percent age shown is to be applied to the general minimum salary of the respective economic zone, multiplied by the number of jobs directly created by the investment, and it is granted for 2 years subject to maintaining the same number of employees. The fiscal benefit is paid in two parts: Half immediately and the other half after one year.
- 3/ In 1986, the percentage shown is to be applied to the general minimum salary of the respective economic zone, multiplied by 3 times the number of jobs directly created by the investment, and it is granted for 2 years subject to maintaining the same number of employees. The whole benefit is paid immediately.

Table 5: MEXICO - DISTRIBUTION OF CEPROFIS BY BRANCH
(1986 Constant Prices)

Industries	1979	1980	1981	1982	1983	1984	1985	1986	1987									
Consumer Goods																		
Processed Food	22	3.6%	6,598	8.9%	7,657	4.3%	10,235	7.0%	5,171	9.3%	3,871	7.5%	2,573	7.0%	2,384	5.8%	2,741	7.4%
Beverages	11	1.8%	2,242	3.0%	2,339	1.3%	6,888	4.7%	797	1.4%	204	0.4%	18	0.0%	21	0.1%	33	0.1%
Tobacco	0	0.0%	2	0.0%	15	0.0%	147	0.1%	31	0.1%		0.0%		0.0%		0.0%		0.0%
Textiles	57	9.2%	3,214	4.3%	3,539	2.0%	4,078	2.8%	1,434	2.6%	417	0.8%	213	0.6%	681	1.7%	1,556	4.2%
Clothing	68	11.0%	588	0.8%	2,028	1.1%	1,527	1.0%	342	0.6%	226	0.4%	21	0.1%	116	0.3%	28	0.1%
Leather and Shoes	5	0.8%	998	1.3%	2,073	1.2%	1,963	1.3%	500	0.9%	391	0.8%	65	0.1%	312	0.8%	162	0.4%
Wood and Wood Pro	19	3.1%	1,209	1.6%	2,318	1.3%	2,378	1.6%	384	0.7%	236	0.5%	40?	1.1%	213	0.5%	134	0.4%
Furniture	0	0.0%	184	0.3%	1,161	0.7%	454	0.3%	183	0.3%		0.0%		0.0%		0.0%		0.0%
Intermediate Goods																		
Paper and Paper P	0	0.0%	2,702	3.7%	3,475	1.9%	5,744	3.9%	1,700	3.0%	57?	1.1%	312	0.8%	282	0.7%	1,282	3.5%
Printing and Publ	0	0.0%	7	0.0%	217	0.1%	311	0.2%	144	0.3%	1?	0.0%	8	0.0%	96	0.2%	5	0.0%
Chemicals	69	11.2%	2,510	3.4%	22,758	12.7%	16,854	11.4%	5,424	9.7%	2,083	4.0%	1,997	5.4%	2,477	6.0%	2,921	7.9%
Coal and Petroleum	6	1.0%	198	0.3%	842	0.5%	6,877	4.7%	628	1.1%	437	0.8%	1,294	3.5%	38	0.1%	610	2.2%
Plastic Products	63	10.2%	908	1.2%	2,499	1.4%	2,021	1.4%	566	1.0%	1,779	3.4%	182	0.4%	378	0.9%	258	0.7%
Non-metallic Mine	156	25.2%	39,635	53.6%	45,752	25.6%	23,433	16.0%	8,683	12.0%	4,880	9.4%	6,582	17.9%	5,707	13.9%	4,105	11.1%
Basic Metals	20	3.2%	6,782	9.1%	61,020	34.2%	36,570	24.2%	21,955	39.3%	23,432	46.4%	16,125	43.9%	22,840	55.5%	19,359	52.5%
Metal Products	25	4.0%	1,038	1.4%	3,680	2.1%	3,558	2.4%	138	0.2%	2,260	4.4%	937	2.6%	1,555	3.8%	495	1.3%
Capital Goods																		
Non-Electric Mech	59	9.5%	2,321	3.1%	7,672	4.3%	8,403	5.7%	2,633	4.7%	5,740	11.1%	3,132	8.5%	2,391	5.8%	711	1.9%
Electric /Electri	16	2.6%	1,002	1.4%	3,810	2.1%	4,363	3.0%	2,445	4.4%	1,400	2.7%	344	0.9%	305	0.7%	319	0.9%
Transport Equipme	22	3.6%	1,741	2.4%	5,404	3.0%	11,718	8.0%	4,411	7.9%	3,609	7.0%	2,485	6.6%	1,329	3.2%	1,685	5.1%
Other Manufacturi	0	0.0%	135	0.2%	248	0.1%	361	0.2%	257	0.5%	129	0.2%	92	0.3%	54	0.1%	81	0.2%
Total Manufacturing(A)	618	100.0%	73,988	100.0%	178,507	100.0%	146,883	100.0%	55,816	100.0%	51,665	100.0%	36,732	100.0%	41,179	100.0%	36,884	100.0%
TOTAL (B)	2,807		83,961		222,010		233,857		91,773		56,113		40,045		44,816		40,093	

Source: SHCP

CROSS SUBSIDIES IN MEXICO'S TELEPHONE TARIFF STRUCTURE

4.1 Cross Subsidies. The fact that Mexican rates for local telephone calls are among the lowest and those for international calls are among the highest in the world suggests that international calls may be priced above costs and be cross-subsidized (together with the excessive fixed charges) local calls, which appear to be priced below costs. One of the major concerns among policy makers is that these cross-subsidies lead to the inefficient allocation of resources by both providers and users. Producer tariffs determine the relative profitability of investing in and offering the various telecommunications services and user charges the relative value of the different modes of communication. In the case of TELMEX, the distortions in the allocation of resources with their negative impact on economic efficiency can be clearly seen in the insufficient capacity and quality of TELMEX's local networks, as well as in user practices such as the circumvention of high international call charges by reverse charging, the leasing of private lines from the SCT, and the investment in earth stations and other facilities necessary to access the Morelos satellite operated by SCT. These observations have highlighted the possibility of more cost-based pricing. Other prevailing concerns about the cross-subsidies are that they are unfair to customers who pay more and that they may enable dominant firms, in this case TELMEX, to engage in predatory behavior and even discourage entry.

4.2 To determine the magnitude of the cross-subsidies, exact revenue and cost data, disaggregated by type of service are needed. During a short visit to TELMEX in early November 1988, disaggregated cost data could be obtained only for the years up to 1986. Based on these figures, a calculation of the cross-subsidy rates in 1986 showed that only international long-distance calls covered their costs, while local calls were heavily, and national long-distance calls slightly, subsidized. (The ratio of revenues over costs for each type of service can be found in Appendix Table A7.10, where the 1986 figures are calculated using the TELMEX data given in Table A7.9. The 1988 numbers were provided by SCT [no disaggregated cost data were available for 1987 or 1988 to confirm the SCT figures]).

4.3 The revenue over cost ratios show a cross-subsidy in the sense that local calls are priced substantially below and international calls substantially above the accounting average cost (Table A7.10). There are, however, two main caveats to this finding. First, an economic analysis of the efficiency and welfare implications of a certain set of prices must take economic or opportunity costs rather than financial or accounting costs as a benchmark and marginal costs rather than average costs. Second, for a multi-product firm the existence and magnitude of cross-subsidies depends on the partly arbitrary allocation of costs to the various products, as discussed below.

4.4 Providers and users of telephone services will allocate their resources inefficiently if the prices of services deviate from their marginal opportunity costs. Therefore, marginal opportunity costs, not accounting average costs, should be used to determine the cross-subsidies. Opportunity costs are obtained from financial costs by deducting the taxes and duties and by compensating for the systematic market distortions (that is, by using country- and sector-specific shadow prices, not market prices, as necessary). A good measure of marginal opportunity costs is often provided by the average incremental cost of operations, maintenance and (appropriately annualized) future capital expenditures.¹ Since not all the data needed to determine the economic prices for TELMEX's local, national and international long-distance call services are available, cross-subsidies were calculated here on the basis of financial accounting data. At best, the results can indicate only the direction of the cross-subsidies and do not constitute a thorough analysis of the economic costs of TELMEX's various services and the determination of marginal cost-based prices.

4.5 The discussion of economic pricing above assumed that TELMEX's costs could be allocated unambiguously to its various types of service. However, multi-product firms typically have shared costs. In telecommunications, most shared costs are common costs, that is, two or more services share inputs such that the mix of outputs can be varied.² For such common costs, it is sometimes possible to identify particular demands that have driven certain investments and to allocate the costs accordingly.³ However, an unaccountable remainder of the shared common costs remains. For this case, Faulhaber has derived a definition of cross-subsidies for a multi-product firm that does not depend on the allocation of costs to the various products.⁴ A set of prices is subsidy-free if and only if the costs can be allocated such that each product bears at least its incremental cost

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- 1/ Details can be found in Mark Tomlinson, "Indonesia: Telecommunications Technical Assistance Project -- A Review of PERUMTEL's Tariff and an Outline for PERUMTEL's Tariff Analysis," Working Paper, World Bank, May 7, 1988.
- 2/ As Hartley and Culham point out, common costs can be distinguished from joint costs, where outputs are produced in fixed proportion from the same output (for example, mutton and wool). See N. Hartley and P. Culham, "Telecommunications Prices under Monopoly and Competition," Oxford Review of Economic Policy, 4 (No.2), (1988): 1-19.
- 3/ Op. cit., Hartley and Culham, p. 5.
- 4/ Faulhaber, G.R. "Cross-Subsidization: Pricing in Public Enterprises," American Economic Review, 65 (1975): 966-77.

and at most the cost of providing it in isolation.⁵ In general, there are many subsidy-free sets of prices. Subsidy-free pricing means pricing at marginal costs only where economies of scale and scope are negligible and a firm operates under approximately constant returns to scale.

4.6 Departures from Economic Pricing. In the preceding section, the potential negative effects of cross-subsidies were taken as the point of departure for the discussion of economic pricing. However, from a regulatory viewpoint, it is not all that clear that cross-subsidies should be eliminated and prices of services based on marginal opportunity costs. On the one hand, economic pricing leads to an efficient static or short-run allocation of resources. In the long run, it encourages efficient entry, i.e., entry by firms that can provide the same services at lower (opportunity) cost to society, and discourages inefficient entry. If the dominant firm (here TELMEX) prices its services at the economic opportunity cost and competitors and potential entrants cannot undercut these prices, the reason is the exploitation of economies of scale and scope.

4.7 On the other hand, whether or not entry occurs and is successful depends on the financial viability of the entering firms in terms of accounting costs, not economic opportunity costs. By preventing economically inefficient but financially viable entry, regulators may "cushion the dominant incumbent against competition and innovation, so leading to higher costs in the long run."⁶ Further, to achieve economic pricing may require cross-subsidies in an accounting sense. It entails, for example, differentiating between types of consumers by setting prices equal to the incremental costs where the fixed costs are allocated in inverse proportion to demand, which generally means offering some products below and some above the accounting average costs. This practice encourages predatory behavior: an incumbent can set its prices equal to the marginal opportunity costs but below the average accounting cost, and thereby prevents entry by firms with average accounting costs below that of the incumbent and that cannot cross-subsidize. Nevertheless, entry of such firms would be welcome in the long run to encourage cost reductions.⁷

4.8 Even if the trade-off between economic pricing and competition policy is ignored for the moment, economic prices can provide only a

5/ Hartley and Culham (op. cit., footnote 7) report a conclusion by William Baumol that, if a firm earns "normal" profits and is as efficient as potential entrants, stand-alone costs need not be considered and cross-subsidies can be ruled out if all products are priced above marginal costs sufficient. W.J. Baumol, W.J., Superfairness, MIT Press, Cambridge, Mass., 1986. However, the assumptions are particularly doubtful for public enterprise monopolists and are probably not satisfied for TELMEX.

6/ Op cit., Hartley and Culham, footnote 7, p. 8.

7/ See D. Helm and G. Yarrow, "The Assessment: The Regulation of Utilities," Oxford Review of Economic Policy, 4 (2) (1988): i-xxxi, in particular, p. xxvii.

benchmark. A practical tariff structure cannot be fully cost-based, as it must also meet organizational and revenue constraints and take general policy objectives into account (such as the provision of universal service, the promotion of certain regions of a country, or the provision of "lifelines" for low-income groups). To minimize the efficiency losses that result from the necessary adjustments, the general rule is that prices should be marked up over economic costs in inverse proportion to the price elasticity of demand of consumers.⁸

4.9 In summary, the extent at which international long distance calls cross subsidize local calls in Mexico seems to be large and growing overtime. The major concerns over this pricing structure are its inability to generate revenues that would cover operating costs and investment needs, and its impact (through price distortions) on user practices. On the other hand, economic theory does not reject outright pricing with cross subsidies and a "practical" tariff structure may actually support it to some extent. However, some rules in setting cross subsidized prices may have to be followed at least to minimize efficiency losses.

^{8/} In his working paper on telephone tariffs in Indonesia, Mark Tomlinson derives the following specific principles from this general rule: (i) adjust access charges (away from marginal costs) proportionately more than call charges; (ii) adjust international call charges more than trunk call charges and these more than local call charges; (iii) adjust peak charges more than off-peak charges. These three principles are aimed at making adjustments broadly in inverse proportion to likely price elasticities. In addition, implementing proposed adjustments in stages would allow checking their effects and making further adjustments as necessary.

REGULATORY ISSUES IN THE IMPLEMENTATION OF PRICE REFORM

5.1 Once the direction of the necessary tariff reform is clear, the next question is how to implement, that is, which method of price regulation to use. At the moment, the SCT is mainly in charge of setting the individual tariff rates for TELMEX's services. However, regulators must have some idea of how TELMEX's performance should improve over time, a need that requires detailed knowledge not only of TELMEX's revenue and cost structure, but also of telecommunications technology in general, as well as of organization and management techniques. In fact, in setting prices, the SCT inevitably depends on information from TELMEX. While to some extent unavoidable, this dependency creates a potential for conflict of interest. Furthermore, individual prices are usually not adjusted frequently enough to account for changes in business conditions. In addition, having some control over prices -- setting prices that stay within a given margin or are compatible with a certain increase in a price index -- would improve the incentives for TELMEX managers to use their own business expertise and to take the risks associated with long-term investments in infrastructure. Therefore, other forms of regulation could be considered.¹

5.2 Regulators have two main alternatives to setting prices individually: rate of return and price cap regulation. Rate of return regulation involves determining overall costs (for both operations and investments) and choosing an "allowable" rate of return over this cost base. "Cost plus an allowable rate of return" then becomes an upper bound for an appropriate index of prices for the various services offered. Price cap rules link price increases to some exogenous variable. British Telecom, for example, is constrained by the "RPI-3" rule, according to which the index of its own prices cannot rise by more than the retail price index minus 3%.

^{1/} This alternative is particularly important if TELMEX is opened to private competition and possibly eventually privatized. The latter issue is not addressed in this note, but it is important to mention that the telecommunications sector (with the possible exception of the provision of local networks) is not, or not as much of, a natural monopoly as it used to be and private competition cannot be generally disallowed on efficiency grounds.

5.3 Both methods have shortcomings. First, the respective choices of an allowable rate of return and of the percent deviation from the retail price index are to some extent arbitrary.²

5.4 Second, rate of return regulation provides no incentives for cost reduction, while the (British-style) price cap regulation creates an incentive to cut costs, at least partly, by reducing the quality of services. However, the relative success in Britain seems to show that it may be easier to control quality than to encourage cost reductions.

5.5 A third problem that arises in both cases is the choice of an appropriate price sub-index for the services offered. As Helm and Yarrow³ point out, whenever a price index must not exceed a certain limit (be it cost plus allowable rate of return or RPI minus X percent), firms have an incentive to overprice high-cost services and underprice low-cost services. The reason is that, through its effect on consumer demand, this practice lowers the relative weight of high-cost services and increases that of low-cost services, a situation that loosens the price constraint. The resulting negative efficiency effect can be mitigated, for example, by choosing fixed index weights for the indexation period at levels calculated to achieve the desired tariff structure, or by imposing additional constraints on individual prices. Despite these problems, reviews are superior to setting prices ad hoc and individually.

5.6 An important issue, in particular for Mexico with its need to attract capital for investments in infrastructure, is the impact of price regulation on investments. One well-known hypothesis is that of Averch and Johnson (1962), who claim that rate of return regulation leads to over-capitalization, because -- through the choice of a more capital-intensive technology than cost minimization would require -- it can induce the regulator to allow the higher profits necessary to satisfy the rate of return criterion.⁴ However, regulators can attempt to curb such behavior by "disallowing" (i.e., charging to shareholders, not users) a portion of the cost of certain facilities on the basis of "prudence reviews" or by simply excluding "unneeded" plants from the cost base on which the firm can earn

2/ If anything, the RPI-X formula appears to be slightly easier to rationalize and justify than does the allowable rate of return formula: the "X" should reflect the productivity increase in the sector over and beyond the general productivity increase in the economy, both of which can be measured relatively precisely. An allowable rate of return would have to be high enough to attract capital for infrastructure investments, but should not exceed the yield of investments in comparable businesses: both of these bounds are relatively view

3/ D. Helm and G. Yarrow "The Assessment: The Regulation of Utilities," Oxford Review of Economic Policy, Vol. 4 No. 2, pp. i-xxxii. 1988.

4/ D. Averch, and L. Johnson "Behavior of the Firm Under Regulatory Constraint," American Economic Review, Vol. 52, pp. 1052-1069. 1962.

an allowed rate of return. This measure can even be applied ex post if necessary.⁵

5.7 In fact, under-capitalization is a more basic and serious problem. Investments in utility industries involve large sunk costs and long payback periods, and their profitability depends on future regulatory decisions. When prices are regulated, firms run the risk that, once they have made an investment, they will not be allowed to charge prices that fully recover their costs. In particular, welfare-maximizing regulators may require pricing at marginal costs (independent of the level of sunk costs) or may "disallow" some part of investment costs. Thus, regulators run into a fundamental credibility problem.⁶

5.8 A final issue facing price regulation is inflation. Table 10, discussed above, shows the steep decline in real telephone charges since 1970. This decline has been a main reason for the fall in TELMEX's investments. One way to allow TELMEX to accumulate capital from operational revenues for investments in infrastructure would be to institutionalize a mechanism by which nominal tariffs would be more or less automatically adjusted for inflation. It is impossible to discuss the general pros and cons of indexation here. However, it can be noted that the main concern would be weighing the possible inflationary impact of indexation against the risk of continuing low investments in the sector because of artificially low real prices.

^{5/} See I. Stelzer, "Britain's Newest Import: America's Regulatory Experience," Oxford Review of Economic Policy, 4 (2) (1988): 67-69.

^{6/} Op. cit., Helm and Yarrow, p. xxi.

Table A2.1: Structure of Manufacturing GDP, 1980-87
(%)

Industrial Categories	1980	1981	1982	1983	1984	1985	1986	1987
Food, Beverage, Tobacco	24.59	24.68	25.88	27.73	26.79	26.23	27.65	27.48
Textile Clothing & Leather Products	13.77	13.67	13.39	13.73	13.19	12.77	12.84	11.88
Wood, Paper & Printing Products	9.74	9.39	9.64	9.69	9.66	9.63	9.66	9.33
Chemicals, Petroleum Products, Rubber & Plastic Products	14.89	15.84	16.16	17.25	17.58	17.53	17.93	18.14
Non-metallic Minerals	6.98	6.77	6.78	6.79	6.83	6.94	6.87	7.43
Metal Products, Mach. & Equip	27.45	28.68	25.43	22.42	23.43	24.32	22.39	23.16
Other Manufactured Products	2.59	2.75	2.72	2.48	2.54	2.59	2.47	2.21
Total GDP Manufacturing	100.00							

Share calculations are based on 1985 prices.

Source: Calculations made from data from Sistema de Cuenta Nacionales

Table A2.2

Total Factor Productivity Growth of Manufacturing Industries, 1964-85

Sectors	1964-74	1974-79	1979-85	1979-81	1981-83	1983-85
Processed food & tobacco	-10.8	5.1	1.9	-0.8	-0.7	7.5
Textiles, garments & leather products	-0.4	1.7	1.6	-14.3	1.5	7.9
Wool & wood products	-4.3	-5.6	2.1	-3.2	-12.9	13.2
Paper, paper products & printing	2.9	2.4	2.4	0.8	-4.2	11.3
Chemical, petrochemical & plastic products	1.2	6.1	3.2	4.1	1.1	4.5
Non-metallic minerals	1.1	3.6	0.7	-1.3	-7.4	11.6
Basic metals	1.8	-3.5	-0.5	-0.8	-10.2	10.6
Metal products, machinery & equipment	0.2	4.8	-2.9	-2.0	-15.3	10.1
Others	<u>0.1</u>	<u>-2.6</u>	<u>-4.3</u>	<u>-9.5</u>	<u>-11.6</u>	<u>8.8</u>
Total manufacturing industries	0.3	2.2	0.1	-1.6	-8.2	8.7

Source: Henriquez, E. and E. Velazco. La Productividad Industrial en Mexico, paper presented to the Conference on "Economic Recovery in Mexico: Labor, and the U.S.-Mexican Policy Relations," UCLA, October 1988

Table A2.3: BREAKDOWN BY INDUSTRY OF REMAINING QRS, 1988

Industry	Percent of Industry's Production	Percent of Total Production
Oil and Derivatives		5.53
Petroleum	100.0	3.09
Derivatives	87.2	1.84
Agriculture	63.0	6.18
Livestock	17.5	1.09
Fishery	63.3	0.49
Agroindustry		6.18
Meat/milk	23.5	1.64
Coffee, processed	99.7	1.66
Sugar, processed	90.0	0.97
Vegetable oils	57.0	0.74
Tobacco products	100.0	0.81
Others		0.31
Industries with programs		3.30
Automobiles and auto parts	62.1	3.16
Pharmaceuticals	12.0	0.14
Microcomputers	a/	a/
Others		0.50
Total		23.20

Source: SECOFI.

a/ Negligible.

**Table A2.4: STRUCTURE OF PRODUCTION
OF PUBLIC ENTERPRISES**

(%) ^{1/}

Description	1970	1975	1978	1981	1983	1985
11 Meat and Milk Products	0.6	1.0	1.2	1.9	1.5	1.8
12 Processed Fruits and Vegetables	0.2	0.1	0.1	0.0	0.0	0.0
13 Milling Products	-	0.2	0.5	0.3	0.4	0.3
14 Nixtomal Products	0.6	0.6	0.6	0.5	0.5	0.6
16 Refined Sugar	4.9	3.8	6.5	6.4	5.3	0.6
17 Animal and Vegetable Oils	-	1.1	2.2	1.8	1.7	1.8
18 Animal Foods	0.7	0.5	1.0	0.7	0.7	0.7
19 Miscellaneous Foods	2.1	2.1	3.1	3.0	4.6	3.6
22 Nonalcoholic Beverages	-	1.2	1.6	1.1	1.0	0.8
23 Tobacco Products	1.8	1.4	11.0	0.9	0.6	0.5
24 Soft Fiber Products	1.4	1.9	0.8	0.6	0.4	0.3
25 Hard Fiber Products	0.4	0.2	0.3	0.2	0.1	0.0
27 Apparel	0.6	0.7	0.5	0.4	0.3	0.4
29 Sawmill Products	1.6	1.5	1.2	1.3	1.3	1.3
31 Paper and Cardboard	0.4	0.1	0.1	0.2	0.1	0.2
32 Printing	42.1	39.8	30.9	26.3	42.6	39.4
33 Petroleum and Petroleum Products	5.5	8.7	7.9	6.8	9.1	8.1
34 Basic Petrochemicals	0.6	0.5	0.4	0.3	0.9	0.7
35 Basic Chemicals	4.2	3.7	3.2	2.6	3.2	3.9
36 Manure and Fertilizer	0.7	0.6	0.6	0.7	1.0	0.9
37 Synthetic Resins	-	0.0	0.1	0.0	0.0	0.0
40 Other Chemicals	0.5	0.0	1.6	0.9	0.4	0.4
45 Other Nonmetallic Mineral Products	0.1	0.2	0.2	0.2	0.1	0.1
46 Basic Ferrous Metals	17.9	15.9	20.3	24.8	17.4	18.4
47 Basic Non-ferrous Metal	0.6	0.5	0.1	0.1	0.0	0.0
48 Metal Furniture	0.8	0.3	0.3	0.4	0.4	0.3
49 Structural Shapes	-	0.3	0.3	0.5	0.5	0.5
50 Others (exc Machinery)	0.9	0.8	0.7	0.8	0.6	0.5
51 Nonelectric Machinery	0.2	0.3	0.5	0.6	0.4	0.4
53 Home Electrical Appliances	-	0.4	0.4	0.4	0.2	0.2
56 Automobiles	6.9	7.6	7.7	9.7	1.5	4.7
58 Frames, Engines, Vehicle Parts	0.8	1.6	2.1	3.0	1.4	2.7
57 Transport Equipment and Materials	2.4	2.2	1.8	2.3	1.7	1.3
58 Other Manufactured Products	-	0.0	0.1	0.2	0.1	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

^{1/} Calculations based on current prices.

Source: For 1970-1975, IX and X Censos Industriales. For the remaining years, Cuentas de Produccion del Sector Publico 1975-1985 and Sistema de Cuentas Nacionales for Mexico.

Table A2.5: PUBLIC SECTOR INVESTMENT BY DESTINATION ^a
(%)

	1946	1953	1963	1977	1981	1985
Agriculture	19.3	18.3	10.2	18.5	11.2	8.9
Industry	15.3	24.7	33.1	45.1	49.7	41.6
Electricity	3.8	8.3	12.8	14.1	11.5	13.2
Petroleum & derivatives	11.1	14.7	14.5	23.6	28.3	28.3
Iron & steel	-	-	1.7	2.4	3.3	3.2
Other	0.4	1.7	4.0	5.9	6.6	4.9
Communications & transportation	52.6	43.7	24.5	18.9	13.7	22.0
Public urban & rural services	7.6	4.5	18.8	6.6	5.7	9.9
Health	2.0	0.3	6.8	2.8	4.6	4.1
Education	1.0	3.5	3.1	4.1	2.8	5.9
Defense administration	2.0	4.8	3.1	2.8	4.2	4.5

Source: Bank of Mexico.

^{a/} The figures for 1946, 1953 and 1963 refer to authorized investments and for 1977, 1981 and 1985 to actual investment. The percentages do not add up to 100% because of the exclusion of a few sectors.

**Table A2.6: SHARE OF PRODUCTION BY PARASTATALS IN SELECTED INDUSTRIES
(percent)**

	1965	1970	1975	1980	1984
Sugar	17.5	34.8	40.0	57.6	52.8
Packaging of fish and seafood	3.4	42.0	14.8	11.9	20.7
Petroleum	100.0	100.0	100.0	100.0	100.0
Refining	100.0	100.0	100.0	100.0	100.0
Fertilizers	44.0	61.3	61.1	62.8	90.0
Iron and steel	41.2	36.2	38.4	44.3	58.7
Automobiles	9.1	21.2	23.7	23.3	10.3
Transport equipment	92.4	51.9	41.9	51.1	51.1

Source: INEGI.

Table A3.1: CREDIT TO MANUFACTURING SECTOR, 1985-87
 (Outstanding year-end balances in millions of current Mexican pesos)

Subsector	1985		1986		1987	
	DB	TC	DB	TC	DB	TC
<u>Consumer Goods</u>						
Meat Slaughter & Dairy	442	22,498	804	23,976	747	98,280
Processed Fruits and Vegetables	7,177	28,490	14,407	53,631	19,807	137,276
Wheat Meal	154	99,186	866	109,200	840	270,660
Corn Meal	120	7,647	104	15,966	239	43,803
Coffee Preparation	39,589	53,979	53,541	76,433	48,472	155,462
Sugar	112,052	116,064	172,461	181,677	301,363	354,092
Vegetable Oil	886	62,329	110	102,077	18,203	271,931
Animal Feedstuff	4,674	23,430	11,401	42,545	465	77,876
Other Foods	8,976	90,279	7,630	146,833	28,566	333,040
Alcoholic Beverages	241	32,062	119	44,934	149	103,053
Beer and Malt Bev.	-	7,275	-	61,497	-	122,118
Non-alcoholic Bev.	90	21,976	57	39,695	47	77,653
Tobacco	30	10,286	50	24,154	50	75,352
Apparel	1,699	59,825	4,329	91,355	5,888	211,579
Leather and Shoes	630	35,659	800	53,505	923	137,639
Pharmaceuticals	6,527	32,527	6,555	53,434	3,695	108,458
Detergents and Cosm.	1,008	25,092	1,392	41,238	8,130	89,293
	-----	-----	-----	-----	-----	-----
Subtotal	184,295	728,604	274,626	1,162,150	437,584	2,667,565
<u>Intermediates</u>						
Spinning & Knitting	19,295	445,531	25,301	132,817	76,546	78,758
Hard Fibers	649	6,884	666	14,857	3,778	36,847
Other Textiles	-	16,697	-	32,032	-	128,137
Wood	126	5,096	4,458	14,182	585	16,272
Other Wood Products	1,825	17,585	3,483	30,309	4,824	77,907
Paper and Cardboard	70,091	119,617	185,594	282,558	260,885	538,435
Basic Chemicals	9,832	85,788	14,794	230,953	35,538	608,318
Fertilizers	113,273	175,773	314,447	479,786	878,472	1,297,167
Syn. Resins	27	15,647	499	58,752	689	193,199
Other Chemicals	448	20,585	478	55,145	15,659	133,633
Rubber	862	29,299	1,348	63,926	2,273	192,957
Plastics	845	68,460	1,033	83,890	659	264,627
Glass	730	25,722	710	64,801	657	265,529
Cement	.0,217	44,907	2,268	113,043	6,236	448,078
Non-metallic Prod.	2,726	32,754	2,797	52,531	3,309	124,335
Basic Iron & Steel	348,905	497,682	547,970	795,229	1,115,129	2,229,698
Non-ferrous Metals	481	8,611	12,229	38,949	1,019	51,845
	-----	-----	-----	-----	-----	-----
Subtotal	580,383	1,249,865	1,118,075	2,543,760	2,406,258	7,052,515

(Table continued at the next page)

(Table A3.1 con't)

Subsector	1985		1986		1987	
	DB	TC	DB	TC	DB	TC
Capital Goods & Consumer Durables						
Metal Furniture	183	41,114	189	19,433	377	10,132
Metal Structures	3,617	37,702	8,872	62,283	57,894	176,804
Other Metallic Prod.	4,055	65,143	4,706	101,045	13,091	246,609
Non-electrical Mach.	18,143	88,799	37,544	170,376	86,444	338,648
Electrical Mach.	3,076	9,098	4,130	19,094	11,243	37,888
Electrical Appliances	211	20,640	26	44,141	27	83,808
Electronic Apparatus	6,675	11,840	10,096	26,030	15,585	58,544
Electrical Apparatus	8,777	43,703	19,618	90,058	71,786	392,931
Automobile Manuf.	187,887	293,974	437,693	663,137	1,121,765	1,679,371
Autoparts	8,505	55,553	13,569	89,572	45,610	239,378
Other Transport Eq.	49,453	59,776	87,571	102,647	71,415	97,216
Subtotal	290,582	696,360	660,014	1,387,816	1,495,237	3,392,311
TOTAL (thousands)	1,055	2,675	2,053	5,094	4,339	13,112

Source: Banco de Mexico data as elaborated on by Bank staff.

Note: DB = Development banking system (development banks and trust funds);
TC = Total credit by the banking system (consolidated).

Table A5.1: EMPLOYMENT (L), REAL WAGES (W) AND OUTPUT (Q) INDEXES PER BRANCH

	1970	1975	1980	1981	1982	1983	1984	1986	1986	1987
Textile										
L	100	91.3	90.3	92.2	89.0	88.9	79.5	78.7	76.3	75.1
W	100	126.2	121.3	123.3	124.7	92.5	87.8	90.5	87.2	72.2
Q	100	119.6	158.7	163.5	153.2	165.7	162.6	182.6	189.2	196.4
Electrical Machinery										
L	100	119.7	170.9	177.5	165.1	130.6	111.7	127.7	131.1	130.0
W	100	117.5	105.7	109.9	104.0	77.2	76.3	77.2	76.2	70.2
Q	100	101.8	168.3	111.1	109.2	112.0	132.3	130.5	139.1	141.2
Rubber Products										
L	100	103.5	190.1	205.2	209.4	205.2	203.5	195.5	198.2	198.0
W	100	89.0	96.0	95.4	95.5	71.1	74.0	71.3	70.2	64.2
Q	100	68.0	88.2	81.3	89.2	100.3	113.4	114.5	116.2	124.1
Non-metal Mineral										
L	100	110.6	167.4	181.4	191.5	109.0	180.6	170.8	164.2	165.9
W	100	124.9	122.1	132.4	111.2	100.6	99.2	92.8	84.5	85.1
Q	100	131.4	120.9	136.0	115.7	101.2	97.7	112.1	110.6	114.2
Petroleum & Coal										
L	100	126.2	158.8	172.2	172.2	145.7	139.1	143.8	155.7	164.2
W	100	148.3	160.0	166.3	160.2	183.6	116.5	119.4	110.7	105.4
Q	100	131.3	140.9	188.4	119.3	125.8	170.7	221.5	239.7	246.5
Petroleum Refineries										
L	100	97.0	121.3	125.5	122.2	108.7	100.0	100.2	103.1	100.1
W	100	122.1	163.9	149.0	146.5	199.1	257.3	143.9	136.2	124.1
Q	100	109.2	151.0	145.5	154.8	324.8	380.0	319.7	407.1	412.1
Iron and Steel										
L	100	113.6	153.4	160.6	156.6	151.5	152.9	145.8	137.9	130.1
W	100	118.8	118.9	121.7	118.6	87.6	83.2	85.5	83.2	76.0
Q	100	128.0	140.8	142.2	134.0	129.5	163.0	161.2	163.7	165.2
Food										
L	100	103.5	129.6	135.4	136.8	128.4	125.3	123.3	119.1	105.2
W	100	130.9	118.1	121.7	118.4	89.6	89.8	88.4	79.1	72.1
Q	100	111.5	101.6	100.3	100.4	93.6	99.3	111.2	119.7	131.0
Glass										
L	100	120.0	146.7	136.0	120.2	121.6	116.8	113.4	107.6	100.6
W	100	118.4	116.0	123.8	122.8	92.8	90.5	90.6	88.1	87.1
Q	100	109.5	143.2	149.0	163.0	158.6	160.6	180.3	198.2	217.0
All Industries										
L	100	110.8	135.6	143.0	139.1	123.8	120.7	120.9	116.1	112.1
W	100	122.9	129.3	131.5	127.6	112.9	116.2	106.5	102.5	88.5
Q	100	111.1	136.7	139.2	138.0	148.7	162.9	170.1	176.4	188.9

Note: C = Total number of employees; W = real wages (deflator, CPS); and Q = real value added per worker.

Table A5.2: ESTIMATED LABOR DEMAND FUNCTIONS FOR MANUFACTURING

	$L_t = a_0 + a_1 W_t + a_2 Q_t + a_3 L_{t-1} + \epsilon_t$					\bar{R}^2	DW	e'e
	\hat{a}_1	\hat{a}_2	\hat{a}_3	a_1^*	a_1^*	(F)	(n)	(se)
Lowly Union- ized Sector	-1.17 (-12.1)	0.74 (13.3)	0.10 (2.3)	-1.124 (-9.7)	1.02 (25.4)	0.96 (478)	1.74 (1.2)	1.30 (0.15)
Highly Union- ized Sector	-0.58 (-4.2)	0.92 (20.2)	0.02 (0.35)	-0.64 (-3.9)	0.87 (17.1)	0.95 (476)	1.84 (0.80)	2.72 (0.19)
All Manufac- turing	-1.07 (-12.5)	0.82 (21.8)	0.06 (1.6)			0.91 (482)	1.72 (1.91)	5.12 (0.19)

Notes:

L_t = total employment; W_t = real product wages (deflator, WPI); Q_t = real value added; L_{t-1} = lagged employment; ϵ_t = random term. All variables are expressed in logs.

In parentheses are the T-ratios (under the estimated parameters a_i), F-values (under

\bar{R}^2), h-test (under the Durbin-Watson statistic) and standard error of the regression (under e'e). a_1^* is the long run elasticity of the i-th variable. The standard deviations were calculated according to Kendall (1969).

The equations were estimated using maximum likelihood to correct for the presence of serial correlation.

The estimated F test for structural differences (Chow Test) is equal to 9.33. The critical F value (at 5%) with 4 degrees of freedom in the numerator and 135 in the denominator is 2.37.

The first and third equations were estimated without the variable L_{t-1} , but the results did not change significantly.

A Chow Test was also performed to analyze the statistical differences in parameters a_1 and a_2 between the two sectors. They were significantly different with 5% confidence interval.

Table A5.3: ESTIMATED LEGAL COST OF DISMISSING 10% OF MANUFACTURING WORKERS
(as of December 1987: figures in thousands)

(1)	Total Employment	489.1
(2)	Total Dismissal	48.9
	Blue Collar (0.72)	35.4 ^a
	White Collar (0.28)	13.5 ^a
(3)	Average Wage	586.1 ^b
(4)	Average Salary	1,016.4 ^b
	<u>Severance Costs (Millions)</u>	
	Blue Collar	290,471.2
	White Collar	192,024.2
(5)	Total	482,495.4
(6)	New Sales	3,899,456.2
	(5)/(6)	0.12
(7)	Wage Bill	481,067.3
	(5)/(7)	1.003

a/ The dismissal is assumed to be proportional to the total actual employment in each category.

b/ Monthly figures excluding non-wage costs of labor. The wages correspond to the blue collar workers and salaries to white collar workers.

**Table A6.1: RELATIVE SHARE OF TRUCKING IN SELECTED COUNTRIES
(%)**

	Colombia	Spain	Brazil	France	Japan	India	US	China	Mexico
Trucking	75.9	74.2	52.0	47.9	46.2	30.0	28.3	10.2	58.7
Rail	2.0	7.4	24.0	33.3	5.4	64.0	27.7	66.0	24.2
Water Transport	8.5	16.7	20.0	4.8	48.3	3.0	26.7	18.4	8.7
Pipelines	12.8	1.9	4.0	14.0	N.A.	3.0	17.1	5.4	7.4
Air	0.2	0.04	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1.0

Source: San Martin, J. Transport in Mexico, comparative analysis of basic indicators with other countries, SCT, 1988.

Notes: Figures are percentages of total ton-km. The figures for China are for 1982, Spain, France, Japan and the U.S. 1984, Colombia and India 1985, and Brazil and Mexico, 1988.

**Table A6.2: WEIGHTED AVERAGE INDEX OF TRANSPORT COSTS
(per ton mile)**

	Colombia	Spain	Brazil	France	Japan	India	US	China	Mexico
Weighted average cost per Ton/mile (in US\$)	9.2	9.0	7.0	6.8	6.0	5.6	4.7	3.5	8.2
As multiple of lowest	2.61	2.56	1.99	1.94	1.70	1.59	1.33	1.00	2.33
Ratios between:									
Mexico:US	1.75								
Mexico:Japan	1.37								
Mexico:Brazil	1.17								

Source: Estimates from consultant's report to SCT, based on weighted average cost in US.

Table A6.3: SURVEY OF USERS TO DETERMINE CHOICE OF TRUCKING FIRMS

Industrial Subsector	No. of Cos. Visited	All Own Account (O/A) Trucking	All Public Trucking	Mix of O/A and Public	Other
Food/food processing	8		5	1	2
Garment/apparel	6	2	3	1	
Textile	2		1	1	
Capital goods	2		2		
Metalworking	3	2	1		
Auto parts	2		1		1
Boatbuilding	2				2
Maquila/assembly	2				2
Distribution of food products	3	1	2		
Tourism/hotels	2		2		
Construction	2			1	1

Source: World Bank Staff's Survey conducted for this report.

Table A6.4: OFFICIAL RATE STRUCTURE FOR PUBLIC TRUCKING, 1987

Fixed rate per ton: 13,061.29 pesos

Variable rate per ton-km (pesos):

Class I 61.345

Class II 54.312

Class III 46.152

Class IV 43.141

Class V 40.2264

Surcharges (%):

- 15 Imports upon entry into Mexico, except oils, fats, fuel, rice, beans, fungicides, eggs, milk, maize, wheat and agricultural machinery
- 25 Unpaved roads
- 25 Empty hauls if rendering exclusive service
- 30 Perishables in refrigerated cars and liquids or gases in tankers

Discounts (%):

- 8 Coal, coke, petroleum, diesel, wheat, maize, seeds, sorghum, rice, sugar, molasses, wheat flour, sand, gravel, limestone, sulphur, cement, wood and salt
 - 50 For the Federal Government (LVQC art.102)
-

Source: SCT.

Table A6.5: AGE PROFILE OF THE PUBLIC TRUCKING**FLEET IN MEXICO AND THE US, 1987****(X)**

	Active	Last Stage	Obsolete	Very Obsolete
	(up to 9 yrs)	(9-11 yrs)	(12-19 yrs)	(20+ yrs)
Mexico	33.8	14.7	37.2	14.8
United States	60.4	12.4	27.2	NA
Average age in Mexico (years)	12.04			
Average age in the US (years)	8.3			

Source: SCT.

Table A7.1:

SUMMARY OF TELMEX TARIFFS AS OF AUGUST 1988
(excluding taxes)

	Residential		Commercial	
	Mexico DF(US\$)	Other (US\$)	Mexico DF */.....	Other
Connection charges				
Administrative expenses ^{b/}	109.33	99.56	134.22	117.78
Installation expenses	-----285.78-----		-----514.44-----	
Mandatory subscribers financing ^{b/}	99.56	84.44	139.11	117.78
Monthly rental ^{c/}	1.88	1.62	3.68	3.24
Additional local calls ^{d/}		-----0.01-----		
Long-distance calls ^{e/}				
0-85 km			0.07	
86-250 km			0.24	
251-450 km			0.40	
451-700 km			0.51	
701 - 1,000 km			0.59	
over 1,000 km			0.74 (2,000 km)	
International calls ^{f/}				
Mexico-Houston			4.77	
Los Angeles			4.95 *	
New York			4.95 *	
Madrid			12.45	
Bogota			10.50	

^{a/} Converted at the rate of US\$1 - M\$2,250.

^{b/} Mandatory purchase of TELMEX shares. Lower figures apply to low-income households and in small localities. Shares are resold at discount of about 50%.

^{c/} Including telephone set and 150 untimed local calls (residences) or 300 untimed local calls (commercial subscribers). Typical figures given cover about 70% of current subscribers. Higher rates apply to subscribers in periphery of capital or in small localities.

^{d/} Untimed. In some localities a flat rate applies.

^{e/} Three-minutes subscribed-dialed full-rate calls. Minimum charge is one air distance. Reduced rates apply 19-22 hrs (-25%) and 22-7 hrs and subscriber dialing is available.

^{f/} Three-minutes, subscriber-dialed, full-rate call. Minimum charge is one minute. Reduced rates available. Substantial surcharges for operator assistance. Specified in US\$ and computed at the day's controlled exchange rate.

* This will have to be checked. According to a second source in TELMEX, the rate is 3.69 (October 1988).

Source: TELMEX.

Table A7.2: COMPARISON OF SELECTED TELMEX TELEPHONE TARIFFS
(August 1988)

	Average for 16 countries <u>g/</u>	TELMEX <u>h/</u>
Connection fee <u>a/</u>	32.30	400.00
Monthly rental <u>b/</u>	5.30	2.74
Local calls <u>c/</u>	0.07	0.01
Domestic Long-distance calls <u>d/</u>	3.30	0.40 *
Reference annual bill		
Residential <u>e/</u>	184.00	83.76
Other <u>f/</u>	666.00	240.01

a/ Excludes mandatory purchase of TELMEX shares. In other countries, include deposit if any.

b/ Average of residential and commercial subscribers in Mexico City's zone 1. In other countries, unweighted average of all categories of subscribers when different rentals apply. Includes all allowances (150/130 untimed local calls for TELMEX residential/commercial subscribers).

c/ Charge per local call in excess of allowance. Untimed in Mexico. Elsewhere, untimed or 3-minute calls.

d/ Three-minute full-rate subscriber-dialed (where available) calls spanning 200-300 km.

e/ Annual price of a hypothetical package of telephone services, comprising 20% of connection fee, 1 year rental, 1,500 local calls (including allowance), and 10 three-minute full-rate subscriber-dialed (where available) long distance calls spanning 200-300 km.

f/ As for residence, except for 5,000 local calls and 200 long-distance calls.

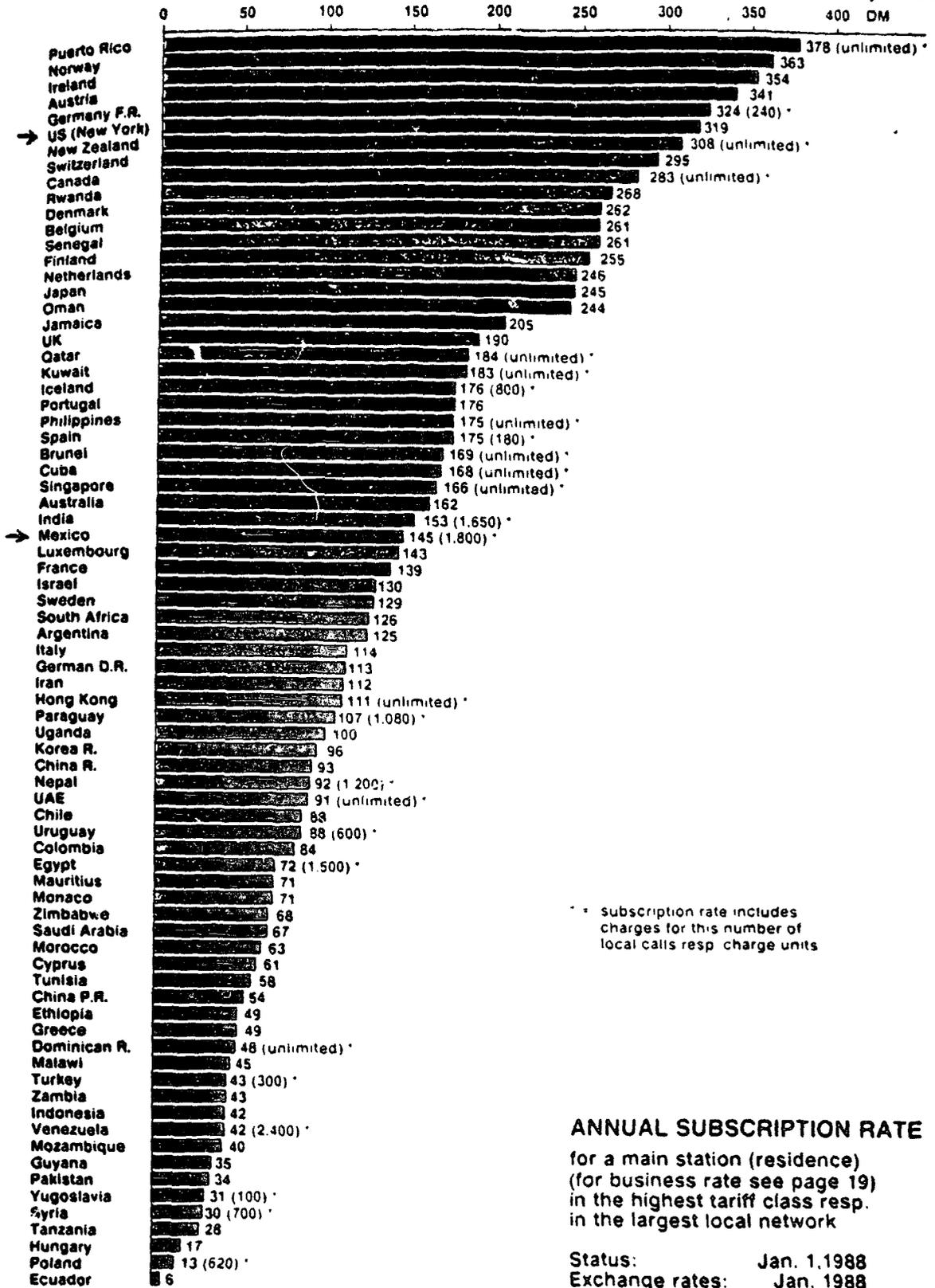
g/ Average for 16 countries with Bank-financed projects.

h/ Converted at the rate of US\$1 - M\$2,250. Excludes taxes on telephone bills (32-72%) and value-added tax (15%).

* This will have to be checked. According to a second source in TELMEX, the rate is 0.344 (October 1988).

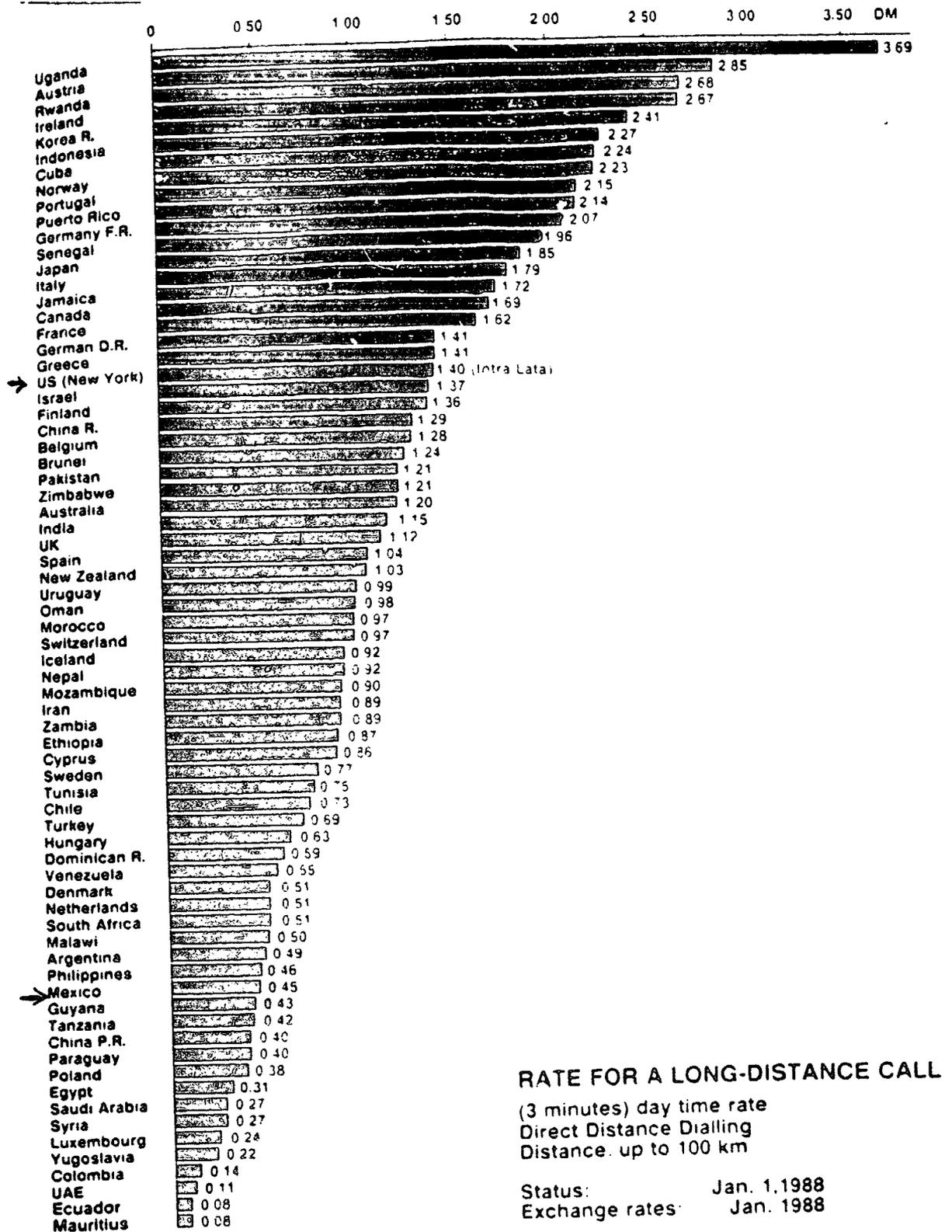
Source: TELMEX.

Table A7.4: CROSS COUNTRY COMPARISONS OF TELEPHONE ANNUAL SUBSCRIPTION RATE, 1988



Source: Siemens, Study on national telephone tariffs worldwide: a detailed comparison, status: January 1988, Siemens A.G., Munich, August 1988.

Table A7.6: CROSS COUNTRY COMPARISONS OF TARIFFS ON DOMESTIC CALLS, 1988



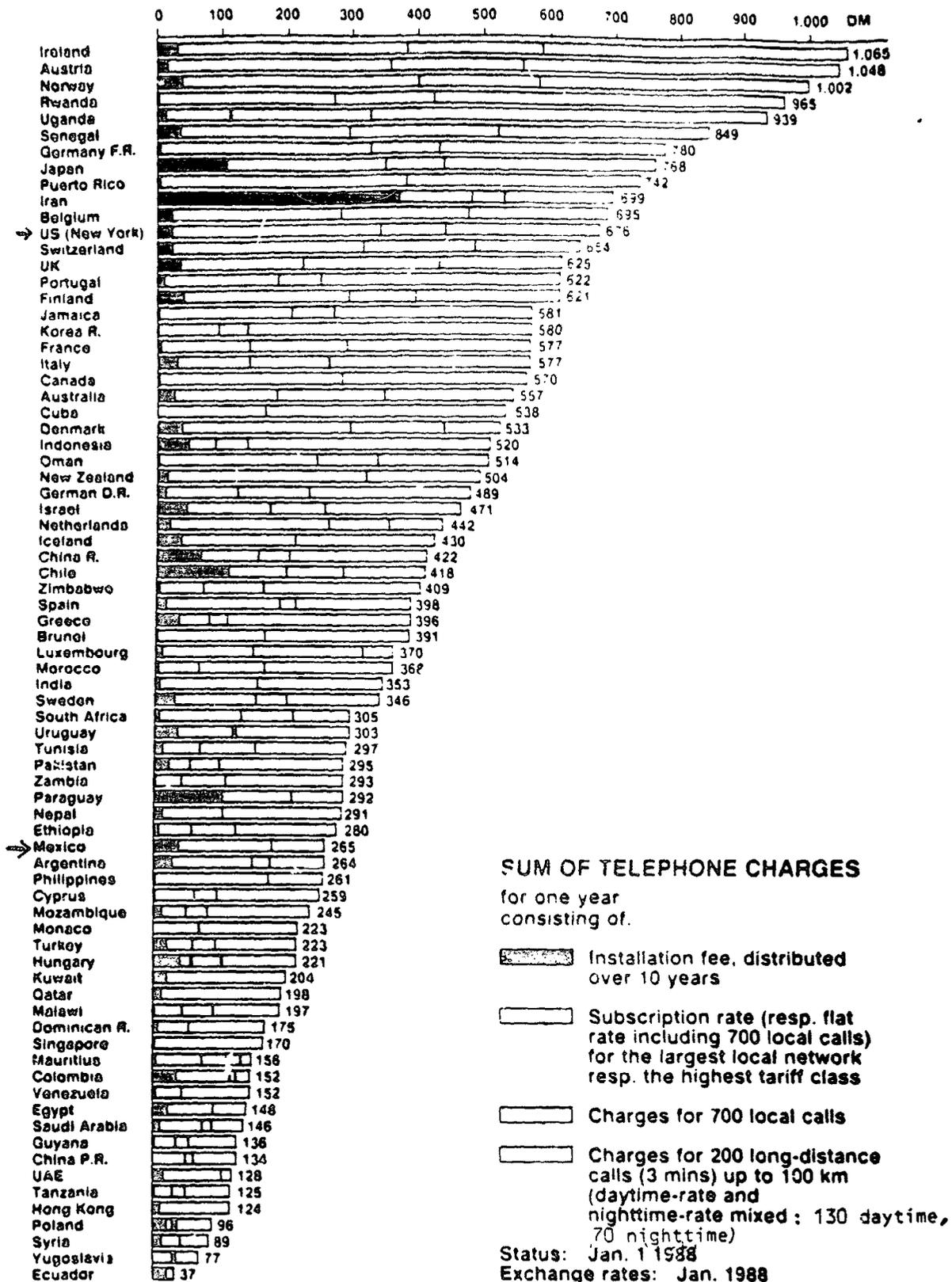
RATE FOR A LONG-DISTANCE CALL

(3 minutes) day time rate
Direct Distance Dialling
Distance: up to 100 km

Status: Jan. 1, 1988
Exchange rates: Jan. 1988

Source: Siemens, Study on national telephone tariffs worldwide: a detailed comparison, status: January 1988, Siemens A.G., Munich, August 1988.

Table A7.7: CROSS COUNTRY COMPARISONS



Source: Siemens, Study on national telephone tariffs worldwide: a detailed comparison, status: January 1988, Siemens A.G., Munich, August 1988.

Table A7.8: COMPARISON

	0	
Ireland		
Austria		
Portugal		
Chile		
Germany F.R.		
→ US (New York)		
Belgium		
Norway		
Australia		
UK		
Italy		
Canada		
France		
Hungary		
Switzerland		
Greece		
Luxembourg		
Netherlands		
Finland		
→ Mexico		
Turkey		
Japan		
Israel		
New Zealand		
South Africa		
Spain		
Denmark		
Dominican R.		
Tunisia		
Argentina		
Poland		
Tanzania		
Sweden		
Ethiopia		
Monaco		
Yugoslavia		

**COMPARISON BY
SUM OF TELEPHONE**

consisting of

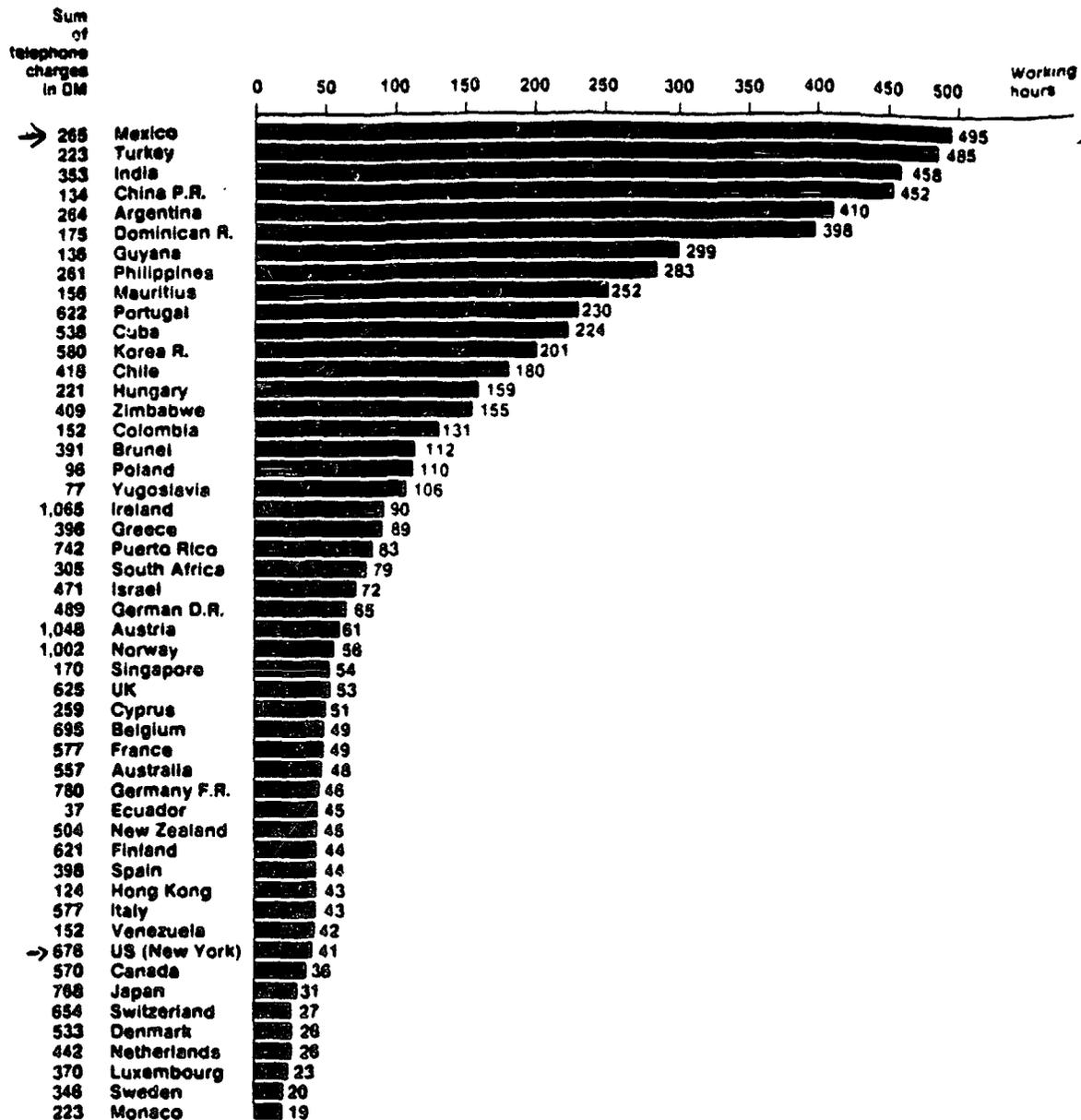
- Installation fee
- Subscription rate
- Charges for 700 minutes
- 200 long-distance minutes
- (daytime-rate and night-rate)

Calculated with Consumer Price Index

Status: Consumer Parties

Source: Siemens, 1990
comparison, status

Table A7.9: WORKING HOURS REQUIRED FOR THE SUM OF TELEPHONE CHARGES



WORKING HOURS REQUIRED FOR THE SUM OF TELEPHONE CHARGES

consisting of:

Installation fee, distributed over 10 years

Subscription rate for the largest local network, resp. the highest tariff class

Charges for 700 local calls and 200 long-distance calls (3 mins) up to 100 km (daytime-rate and nighttime-rate mixed: 130 daytime, 70 nighttime).

Calculated with gross wages per hour paid by the manufacturing industry in 1986

Source: Siemens, Study on national telephone charges worldwide: a detailed comparison, status: January 1988, Siemens A.G., Munich, August 1988.

Table A7.10: TELMEX'S REVENUE OVER COST
RATIOS BY TYPE OF SERVICE

	1986	1988
Local calls	0.41	0.36
National long-distance calls	0.89	0.86
International long-distance calls (US and Canada)	10.81	
International long-distance calls (other countries)	3.96	
International long-distance calls (all countries)	8.79	5.78

Source: The 1986 figures are calculated from the TELMEX. The 1988 data are the most recent SCT estimates.

Table A7.11: CROSS COUNTRY COMPARISON OF TAXES ON TELEPHONE CHARGES, 1988

APPLICATION OF TAXES TO TELEPHONE CHARGES

Status: January 1, 1988

VAT = Value Added Tax

Country	VAT does not exist	VAT not applicable to telephone charges	VAT is included in telephone charges	VAT to be added to telephone charges	Other taxes applicable to telephone charges
Argentina				+ 18%	
Australia	x				
Austria	x				
Belgium				+ 19%	
Brunei	x				
Canada	x				+ 10%
Chile			x (20%)		
China P.R.	x				
China R.			x (10%)		
Colombia				+ 6%	
Cuba	x				
Cyprus					+ 10%
Denmark			x (22%)		
Dominican R.				+ 6%	
Ecuador					+ 25%
Egypt	x				
Ethiopia	x				
Finland			x (16%)		
France			x (18.6%)		
German D.R.			x		
Germany F.R.		x			
Greece				+ 16%	
Guyana	x				
Hong Kong	x				
Hungary		x			
Iceland	x				+ 25%
India	x				
Indonesia	x				
Iran	x				
Ireland	x				
Israel				+ 15%	
Italy				+ 9%	
Jamaica	x				+ 10%
Japan	x				
Korea Rep.				+ 15%	+ 10%
Kuwait	x				
Luxembourg		x			
Malawi	x				

Source: Siemens, Study on national telephone tariffs worldwide: a detailed comparison, Status: January 1988, Siemens A.G., Munich, August 1988.

(ctd.)

Table A7.11 (cont'd): CROSS COUNTRY COMPARISON OF TAXES ON TELEPHONE CHARGES,

1988
APPLICATION OF TAXES TO TELEPHONE CHARGES

Status: January 1, 1988

VAT = Value Added Tax

Country	VAT does not exist	VAT not applicable to telephone charges	VAT is included in telephone charges	VAT to be added to telephone charges	Other taxes applicable to telephone charges
Mauritius	x				{ + 72% local + 42% national
Mexico				+ 15%	
Monaco			x (18.6%)		
Morocco			x (12%)		
Mozambique	x				
Nepal	x				
Netherlands	x				
New Zealand			x (10%)		
Norway			x (20%)		
Oman	x				
Pakistan	x				
Paraguay	x				
Philippines		x			
Poland	x				
Portugal			x (8%)		
Puerto Rico	x				
Qatar	x				
Rwanda	x				
Saudi Arabia	x				
Senegal	x				
Singapore	x				
South Africa	x				
Spain				+ 12%	
Sweden		x			
Switzerland	x				
Syria	x				
Tanzania	x				+ 5%
Tunisia	x				
Turkey			x (12%)		
UAE	x				
Uganda	x				+ 10%
UK				+ 15%	
Uruguay				+ 21%	
US	x				+ 8.25%
Venezuela	x				
Yugoslavia	x				
Zambia	x				+ 15%
Zimbabwe	x				+ 12.5%

Source: Siemens, Study on national telephone tariffs worldwide: a detailed comparison, Status: January 1988, Siemens A.G., Munich, August 1988.

**Table A7.12: OPERATING REVENUES AND COSTS OF
TELMEX IN REAL TERMS 1976-1987
(Pesos)**

	Operating revenues (million)	Operating revenues/lines	Operating costs (million)	Operating costs/line	Total cost (million)	Total cost/line (million)
1976	11068	6160	3120	1726	6814	3792
1977	12485	6173	3387	1675	8116	4013
1978	13699	6090	3558	1582	8436	3750
1979	14654	6026	3660	1505	8663	3517
1980	14281	5418	3872	1469	8368	3175
1981	16537	5762	4435	1545	9340	3254
1982	17837	5879	5348	1763	10052	3313
1983	17615	5468	4762	1478	9096	2824
1984	17096	5030	5491	1616	10542	3102
1985	16496	4719	5492	1571	10845	3103
1986	18975	5025	7425	1966	12899	3416
1987	21572	5413	8995	2257	15233	3823

	Depreciation line (million)	Depreciation line (pesos)	Maintenance line (pesos)	Maintenance line (pesos)	CPI	Number of lines
1976	2282	1270	1430	796	66	1796797
1977	3104	1534	1626	804	85	2022533
1978	3168	1408	1710	760	100	2248399
1979	3075	1264	1819	748	118	2431931
1980	2734	1037	1762	668	149	2635882
1981	2990	1042	1916	688	191	2870044
1982	2442	805	2262	746	304	3034044
1983	2458	763	1877	583	613	3221300
1984	2985	878	2066	608	1014	3398679
1985	3108	889	2245	642	1600	3495420
1986	2894	766	2580	683	2979	3776195
1987	2959	743	3279	823	6907	3984958

Source: TELMEX data, own calculations.

**Table A7.13: MEXICO OPERATING REVENUES, REINVESTMENT PAYMENTS,
AND INVESTMENTS IN REAL TERMS 1976-1987 (1978 = 100)**

	Operating revenues (m pesos)	Reinvestment by the government (m pesos)	Investment in infrastructure (m pesos)	Growth rate of investments (%)
1976	11068	1442	7300	
1977	12485	1616	7432	1.8
1978	13699	1785	7458	0.3
1979	14654	1814	6876	-7.8
1980	14281	1592	7005	1.9
1981	16537	1642	7485	6.9
1982	17837	1748	7082	-5.4
1983	17615	1379	6627	-6.4
1984	17096	1210	7921	19.5
1985	16496	1024	8405	6.1
1986	18957	1834	9109	8.4
1987	21572	3428	9552	4.9

Source: TELMEX data, own calculations.

Table A7.14:

MEXICO: BASIC STATISTICS OF THE TELECOMMUNICATIONS SECTOR, 1974-87

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Telephone Service														
Lines in Service (10^3)	1,391	1,596	1,798	2,022	2,249	2,431	2,633	2,870	3,034	3,221	3,399	3,495	3,776	3,985
Telephones connected (10^3)	1,481	1,844	3,233	3,838	4,064	4,450	4,903	5,411	5,845	6,244	6,651	7,168	7,558	8,016
Public telephones (10^3)	11	12	16	21	24	28	27	29	31	34	35	35	35	35
Number of calls														
Long distance (10^6)	141	168	197	222	268	332	402	462	510	521	564	606	665	725
International (10^6)	17	20	23	24	30	38	47	57	55	52	56	57	71	78
Employees/1,000 lines	14.1	12.9	12.2	11.6	11.1	10.7	10.5	10.3	10.3	10.1	10.2	10.7	10.8	10.8
Telex Services														
Exchange lines cap. (10^3)	N.A.	6,050	6,310	7,470	7,860	9,448	11,477	N.A.						
Lines in service (10^3)	4,600	4,980	5,408	6,114	6,862	8,078	9,909	N.A.						

Source: SCT

Figure A7.1: MEXICO: SECRETARIA DE COMUNICACIONES Y TRANSPORTE (SCT)

Outline Organization Chart

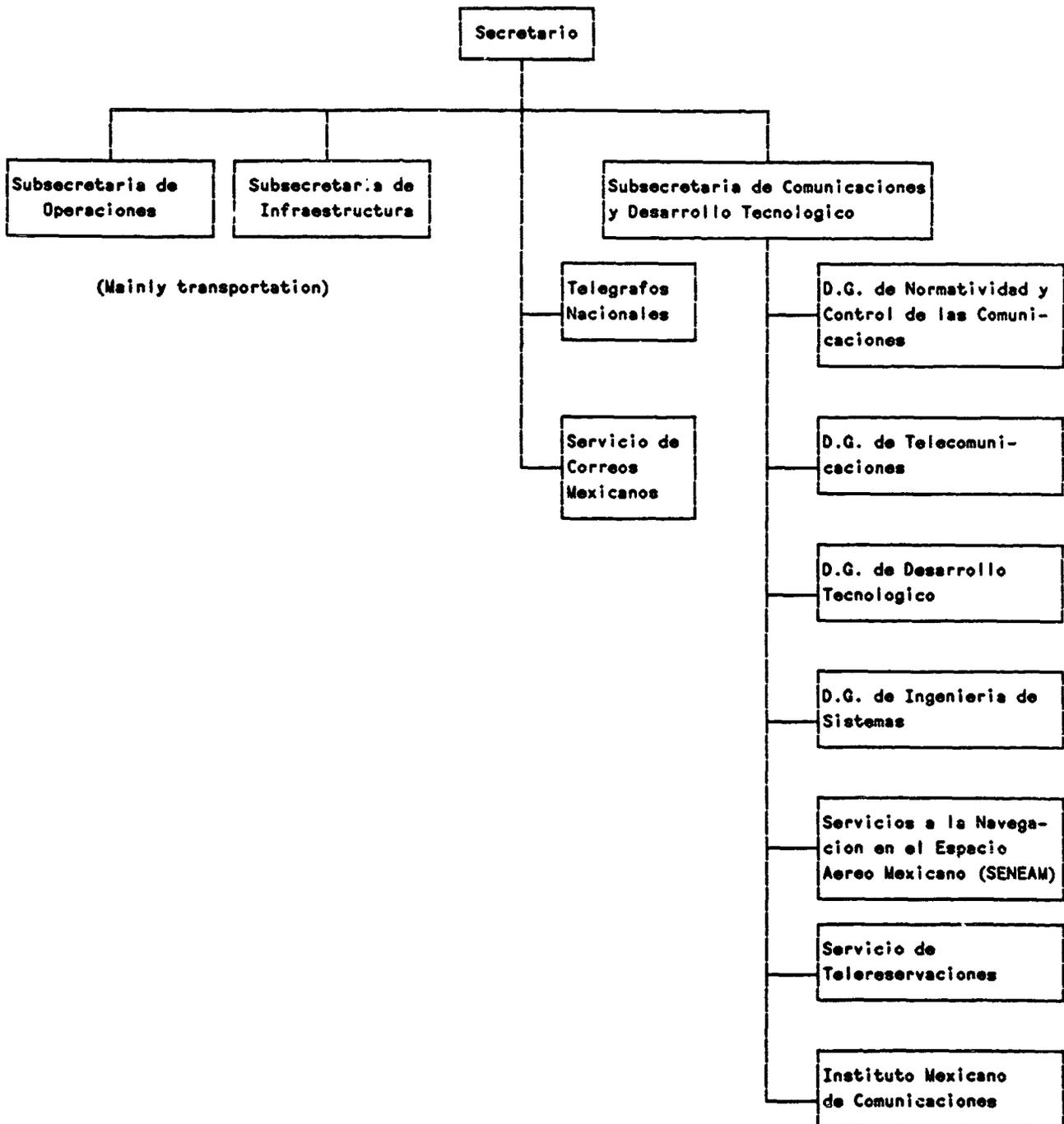


Figure A7.2: MEXICO

DIRECCION GENERAL DE TELECOMUNICACIONES

Organization Chart

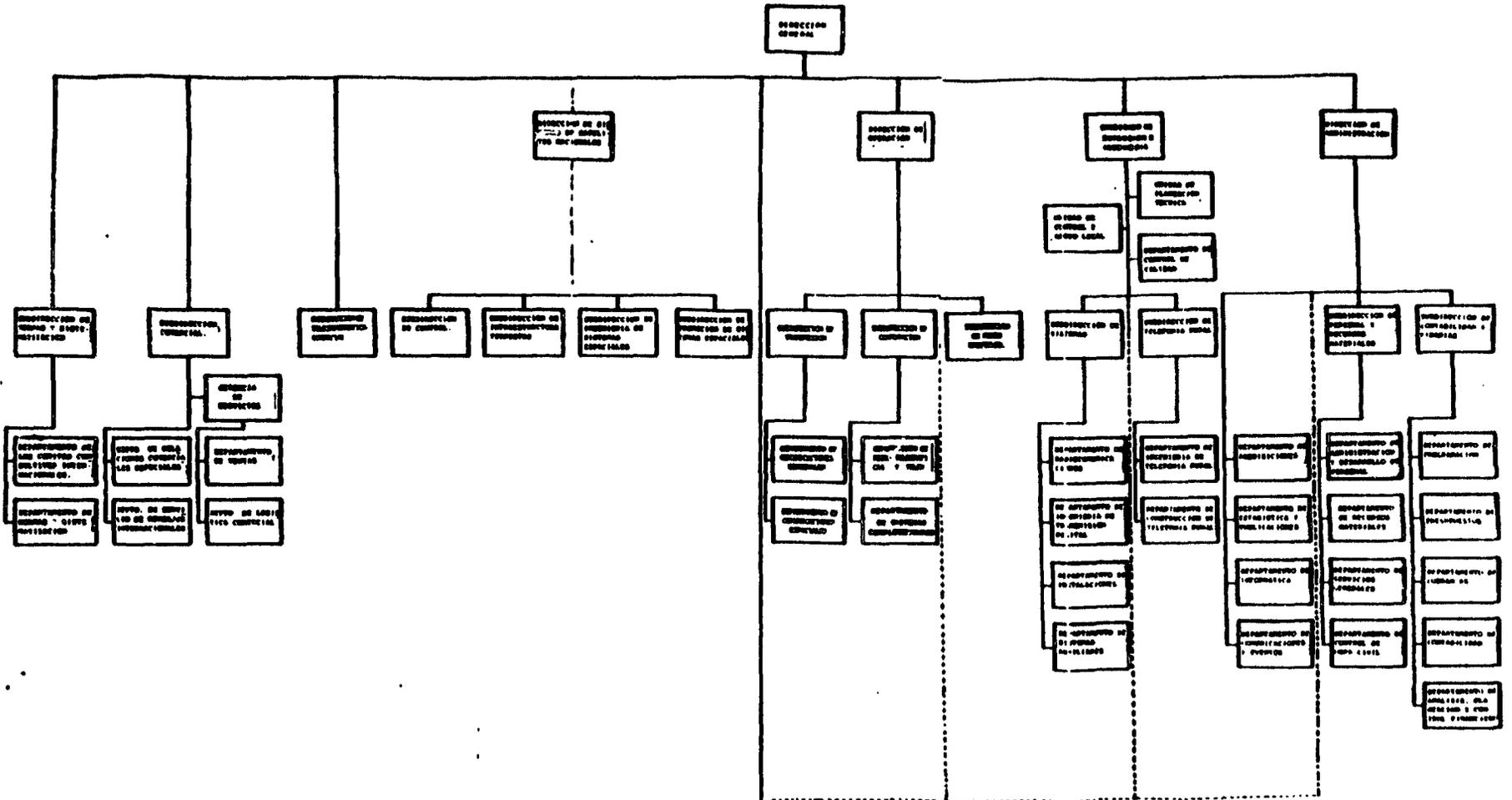


Table A8.1: Technical Concentration, 1970-1985
(%)

Four plant Concentration Ratios	1970	1975	1980	1985
<u>Consumer Goods</u>				
Meat Slaughter and Dairy Prods.	37.45	52.70	37.16	56.24
Fruit and Vegetable Preparation	67.77	68.87	66.86	54.61
Wheat Meal	25.71	39.57	31.80	35.03
Corn Meal	26.69	32.80	14.87	52.27
Coffe Preparation	41.43	60.03	49.80	57.18
Sugar	13.33	NA	11.10	51.71
Vegetable Oil	24.56	NA	20.94	31.22
Animal Feedstuff	20.41	NA	11.99	13.06
Other Foods	46.39	57.20	49.89	55.76
Alcoholic Beverages	53.56	63.81	65.43	75.16
Beer and Malt Beverages	70.10	72.60	58.33	55.73
Non-alcoholic Beverages	1.70	12.90	13.57	15.75
Tobacco	79.47	78.40	84.08	93.23
Apparel	25.18	38.28	22.16	43.34
Leather and Shoes	18.51	45.56	17.01	39.01
Pharmaceuticals	12.60	45.80	14.15	13.51
Detergents and Cosmetics	54.10	62.30	65.79	63.23
Average	37.00	45.43	37.35	47.41
<u>Intermediates</u>				
Spinning and Knitting	39.09	NA	26.52	40.29
Natural Fibers (except cotton)	36.88	51.95	37.02	58.73
Other textiles	56.43	60.64	52.44	73.86
Wood	24.24	27.90	27.33	36.22
Other Wood Products	33.87	49.77	33.31	49.35
Paper and Cardboard	39.40	40.17	50.23	50.89
Basic Chemicals	41.08	51.20	38.66	56.10
Fertilizers	46.82	57.60	59.59	59.10
Synthetic Resins	56.40	52.30	38.62	63.01
Other Chemicals	56.69	58.35	47.22	47.11
Rubber	37.75	42.20	43.23	43.52
Plastics	12.00	NA	NA	47.24
Glass	78.29	31.10	78.59	67.14
Cement	34.10	31.10	34.90	33.58
Non-Metallic Products	42.74	47.30	39.02	51.13
Basic Iron and Steel	61.94	61.60	62.70	78.70
Non-Ferrous Metals	80.58	77.47	73.41	83.37
Average	45.90	48.29	46.42	55.26
<u>Capital and Consumer Durables</u>				
Metal Furniture	33.10	27.60	18.89	18.61
Metal Structures	21.80	47.90	14.78	28.40
Other Metallic Products	57.35	55.33	58.55	52.98
Non-Electrical Machinery	58.96	38.30	50.03	57.94
Electrical Machinery	33.55	44.80	34.66	43.27
Electrical Appliances and Houseware	42.70	51.30	28.99	82.30
Electronic Apparatus	58.10	61.55	53.52	64.14
Electrical Apparatus	60.13	57.60	64.64	64.03
Automobile Manufacturing	57.80	57.60	54.90	63.90
Autoparts Manufacturing	53.83	54.51	54.51	49.63
Other Transport Equip.	82.58	81.68	61.65	81.04
Average	50.90	52.56	44.10	56.75
Total Manufacturing Average	44.60	48.09	42.63	53.14

Source: 1970, Fernando Fajnzylber y Trinidad Martínez Tarrago, Las Empresas Transnacionales, Expansión Mundial y Proyección en la Ind Mexicana, FCE, 1976. 1975, Donaciano Quintero Estructura del Sector Industrial Mexicano en 1975, en Comercio y Desarrollo, Septiembre 1982; 1980; ILET.

Table A8.2: Differences In Technical and Economic Concentration, 1980
(Four-firm and four-plant ratios in percentage)

	Technical Concentration (1)	Economic Concentration (2)	Ratio (2/1)
CONSUMER GOODS			
Meat Slaughter, and Dairy Prods	37.18	42.58	1.15
Fruit and Vegetable Preparation	66.86	68.33	1.02
Wheat Meal	31.60	38.82	1.22
Corn Meal	14.87	26.75	1.80
Coffe Preparation	49.80	52.66	1.06
Sugar	20.33	23.46	1.15
Vegetable Oil	20.94	20.22	0.97
Animal Feedstuff	11.99	24.16	2.02
Other Foods	49.89	51.79	1.04
Alcoholic Beverages	65.43	66.62	1.02
Beer and Malta Beverages	58.33	93.48	1.60
Non-alcoholic Beverages	13.67	19.29	1.42
Tobacco	84.08	89.94	1.07
Apparel	22.16	22.45	1.01
Leather and Shoes	17.01	18.31	1.08
Printed Publishing	26.13	26.26	1.01
Pharmaceuticals	14.15	16.91	1.20
Detergents and Cosmetics	65.79	65.89	1.00
Average	37.24	42.68	1.15
INTERMEDIATES			
Spinning and Knitting	26.52	31.57	1.19
Natural fibers (except cotton)	37.02	60.52	1.63
Other textiles	52.44	53.20	1.01
Wood	27.33	35.15	1.29
Other Wood Products	37.38	38.01	1.02
Paper and Cardboard	50.24	55.33	1.10
Basic Chemicals	38.66	44.54	1.15
Fertilizers	59.59	94.12	1.58
Synthetic Resins	38.62	54.60	1.41
Other Chemicals	48.14	49.69	1.03
Rubber	43.23	47.06	1.09
Plastics			
Glass	76.61	76.61	1.00
Cement	34.90	42.65	1.22
Non-Metallic Products	39.02	41.35	1.06
Basic Iron and Steel	62.70	70.02	1.12
Non-Ferrous Metals	65.13	7.20	1.03
Average	46.09	53.85	1.17
CAPITAL AND CONSUMER DURABLES			
Metal Furniture	18.39	19.21	1.02
Metal Structures	14.78	15.36	1.04
Other Metallic Products	58.55	60.18	1.03
Non-Electrical Machinery	50.03	50.34	1.01
Electrical Machinery	34.66	38.34	1.11
Electrical Appliances and Houssw.	28.99	29.20	1.01
Electronic Apparatus	53.52	53.77	1.00
Electrical Apparatus	64.64	64.64	1.00
Automobile Manufacturing	54.90	76.20	1.39
Autoparts Manufacturing	44.54	50.52	1.13
Other Transport Equip.	61.65	61.65	1.00
Average	44.10	47.22	1.07
Total Manufacturing Average	43.60	48.00	1.15

Source: ILET

**Table A8.3: International Comparison of Economic Concentration
by Type of Goods,**

Four-firm Concentration Ratios

	<u>Mexico</u> (1985)	<u>Argentina</u> (1984)	<u>U.S.A.</u> (1977)	<u>Indonesia</u> (1985)
<u>Consumer Goods</u>				
Food Products	45.23	39.80	45.64)	
Beverages	48.80	46.20	44.67)	60.2
Tobacco	93.23	79.90	69.33)	
Garment and Shoes	41.17	36.00	28.08)	
<u>Intermediates</u>				
Textiles	57.82	42.20	53.07	40.6
Wood and Cork	42.78	32.60	28.50	18.1
Pulp.Paper Produc	50.89	41.90	32.25	45.3
Chemicals	50.61	58.60	40.53	49.7
Rubber and Plastics	43.52	66.90	49.00	-
Cement	33.58	43.90	24.00	-
Basic Metals	38.55	69.80	59.67	87.1
Basic Iron and Steel	89.67	-	-	-
<u>Capital Goods and Consumer Durables</u>				
Metal Products	32.66	32.80	30.30	19.6
Non-Electric. Mach.	57.94	51.10	34.83	38.1
Electrical Mach.	43.27	47.40	54.21	49.3
Transport Equip.	72.92	45.20	70.58	69.7

Source: Same as Table 8.4.